TTP 246M/344M

THERMAL TRANSFER / DIRECT THERMAL BAR CODE PRINTER

SERVICE MANUAL

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1. FOUNDAMENTALS ABOUT THE SYSTEM

1.1Printer Overview

1.1.1 Front View

Fig. 1.1 Printer Front View

1.1.2 Rear View

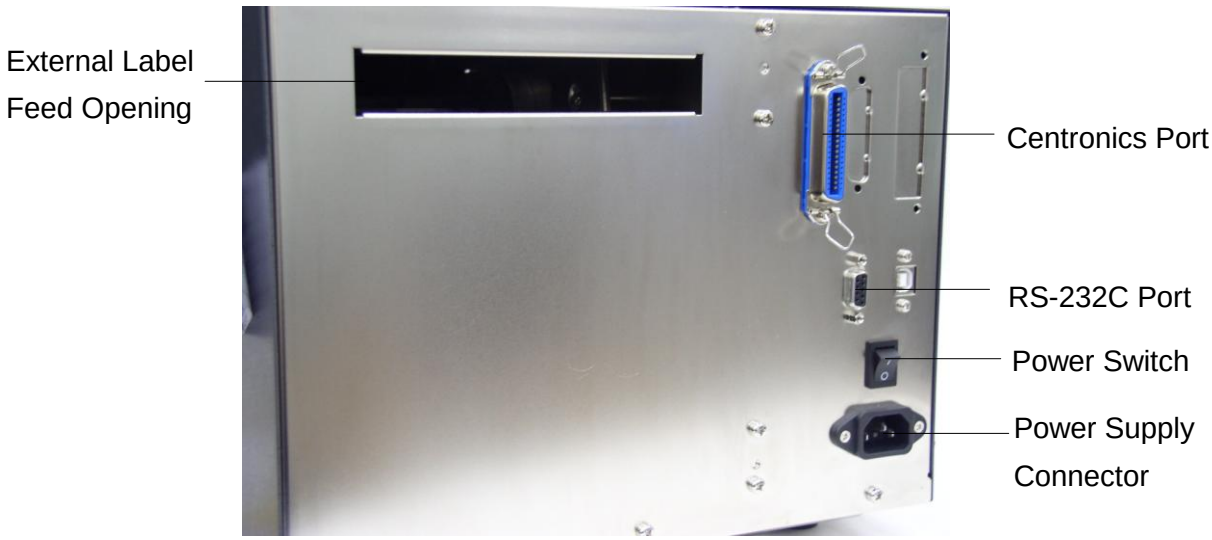


Fig. 1.2 Printer Rear View

1.2 Pinter Specification

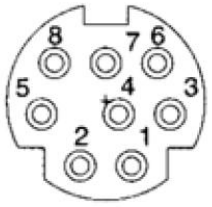
Item	Specification
Printing Mode	Thermal transfer and direct thermal
Resolution	203DPI(TTP246M), 300 DPI (TTP344M)
Max. Print Length	1000 mm (TTP246M), 460 mm (TTP344M)
Max. Print Width	108 mm (TTP246M), 104 mm (TTP344M)
Print Speed	3,4,5,6 ips (TTP246M); 2,3,4 ips (TTP344M)
Environment	
Temperature	5 ~40 ^{O}C
Humidity	30 ~ 85 %
Temperature	-10 ~ 60 ^{O}C
Humidity	20 ~ 95 %
Ventilation	Free air environment
Electrical	
Sensors	Label gap sensor, ribbon end sensor, black mark sensor, head open sensor, label taken sensor
Interface	RS-232C (RS422/485 option), Centronics (SPP), USBV1.1 and internal LAN adapter (option).
Cutter	4 inch width (Paper thickness up to 0.25 mm)
Power	100-240 V universal switching power supply.
Other	Real Time Clock
CPU	HITACH SH2 7040A
TPH	246M KPC-108-8TA01 344M KPC-106-12TA01
Stepping Motor	KH42JM2B165
Compliance	CE, UL/CUL, BSMI, FCC Class A, TÜV-GS
Memory	Flash ROM (2MB), DRAM (2MB) and 8M optional flash

Communication Interface	
Communication	RS-232C (DB-9) at 2400, 4800, 9600 or 19200 baud rate
Word Length	7 or 8 data bits, 1 or 2 stop bits, selectable parity
Communication Protocol	XON/XOFF and DSR/DTR
Parallel Port	Standard parallel interface
Input Buffer	10KB

- RS-232 Interface Pin Configuration

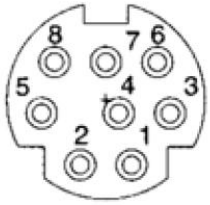
Host Function	9 Pin	25 Pin		9 Pin	Printer Function
				1	+5V
RxD	2	3	←	2	TxD
TxD	3	2	→	3	RxD
DTR	4	20	→	4	DSR
GND	5	7		5	GND
DSR	6	6	→	6	RDY
RTS	7	4	←	7	N/C
CTS	8	5	←	8	RDY
				9	+5V

- Cutter off Mini-DIN Connector Pin Assignment



Mini-DIN		PCB JP10 connector
Pin 1	↔	Pin 1, brown
Pin2	↔	Pin 3, red
Pin 3	↔	Pin 2, orange
Pin 4	↔	Pin 4, yellow

- Peeler Mini-DIN Connector Pin Assignment

	Mini-DIN		PCB JP20 connector
	Pin 5	⟷	Pin 1, brown
	Pin 6	⟷	Pin 2, red
	Pin 7	⟷	Pin 3, orange
	Pin 8	⟷	Pin 4, yellow

1.3 Available Bar Codes

- Code 39
- Code 39C
- Code 93
- Code128 subsets A.B.C
- Codabar
- Interleave 2 of 5
- EAN-8
- EAN-13
- EAN-128
- UPC-A
- UPC-E
- EAN and UPC 2(5) digits add-on
- CPOST
- MSI
- PLESSEY
- POSTNET
- EAN-14
- ITF-14
- PDF-417
- Maxicode
- DataMatrix
- QR code

2. SUPPLY SPECIFICATIONS

2.1 Label Specification

Item	Specification
Type	Roll and label (Continuous, die-cut, fan-fold, ticket and tag is option)
Label Width	25.4～116 mm (1”～4.4”)
Label Length	TTP-246M 10～1000 mm (0.4”～39.33”) TTP-344M 10~460 mm (0.4”~18”)
Label Thickness	0.06～0.25 mm
Label Roll Diameter	203 mm (Max.)
Roll Up Method	Print surface wound outside as standard.
Roll Core Diameter	25 or 77 mm
Black Mark Width	3 mm (Min.)

2.2 Ribbon Specification

Item	Specification
Ribbon Width	25.4～114.3 mm
Ribbon Length	300 m (Max.)

Note: The maximum length of ribbon depends on its thickness and core outside diameter.

The formula below defines the correlation between ribbon roll length and ribbon core diameter.

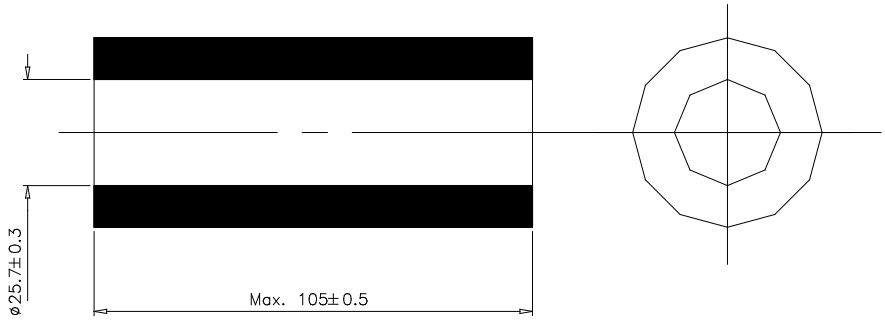
$L = \frac{(D^2 - d^2) \times \pi}{4t}$, where

L = Ribbon length

D = Max. roll diameter

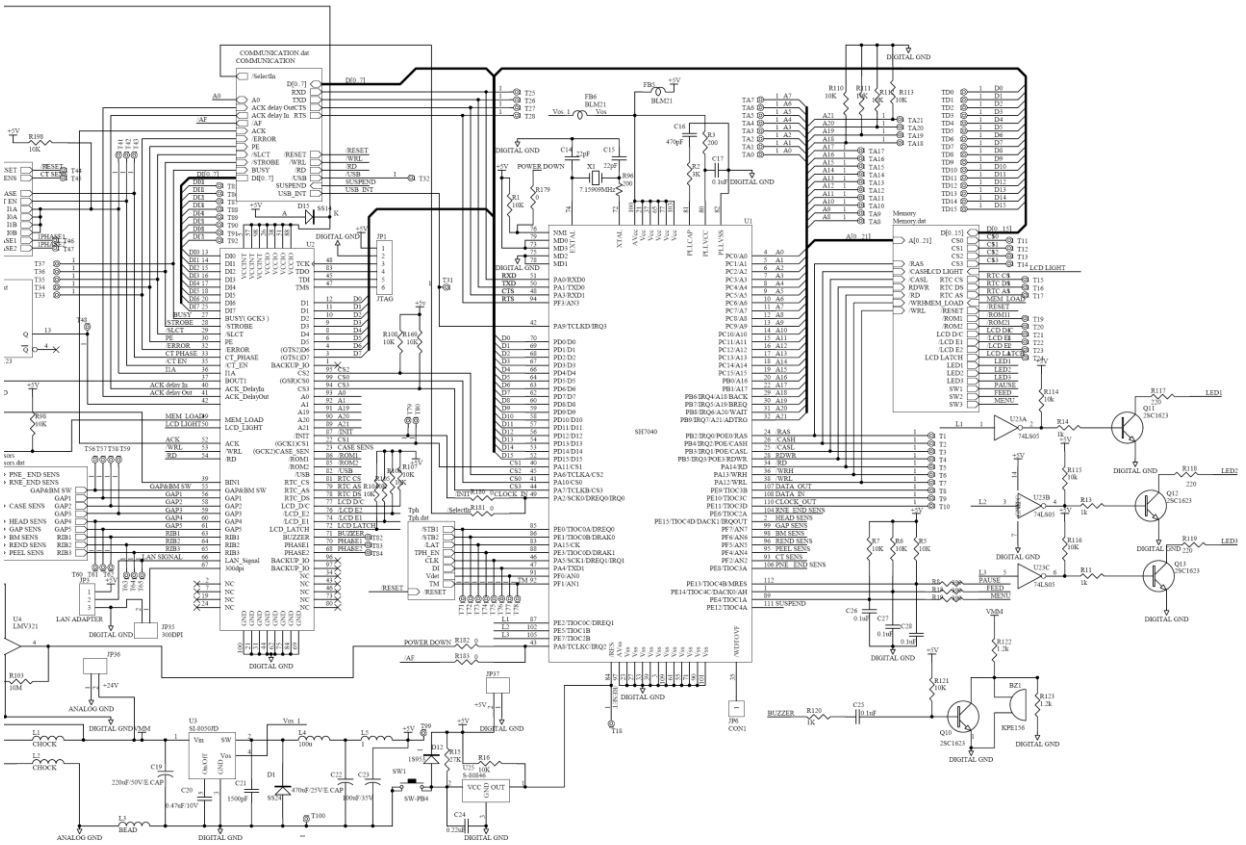
d = Ribbon core outside diameter

t = Ribbon thickness



3. CIRCUIT DESCRIPTION

3.1 PCB Function



The mainboard of TTP-344M/246M includes nine system blocks.

1. Memory System
2. Sensor System
3. Decoder System
4. RTC, EEPROM, LCD System
5. Print Head Connector System
6. Motor System
7. Power System
8. USB System
9. Communication Port

The figure below shows the PCB system areas:

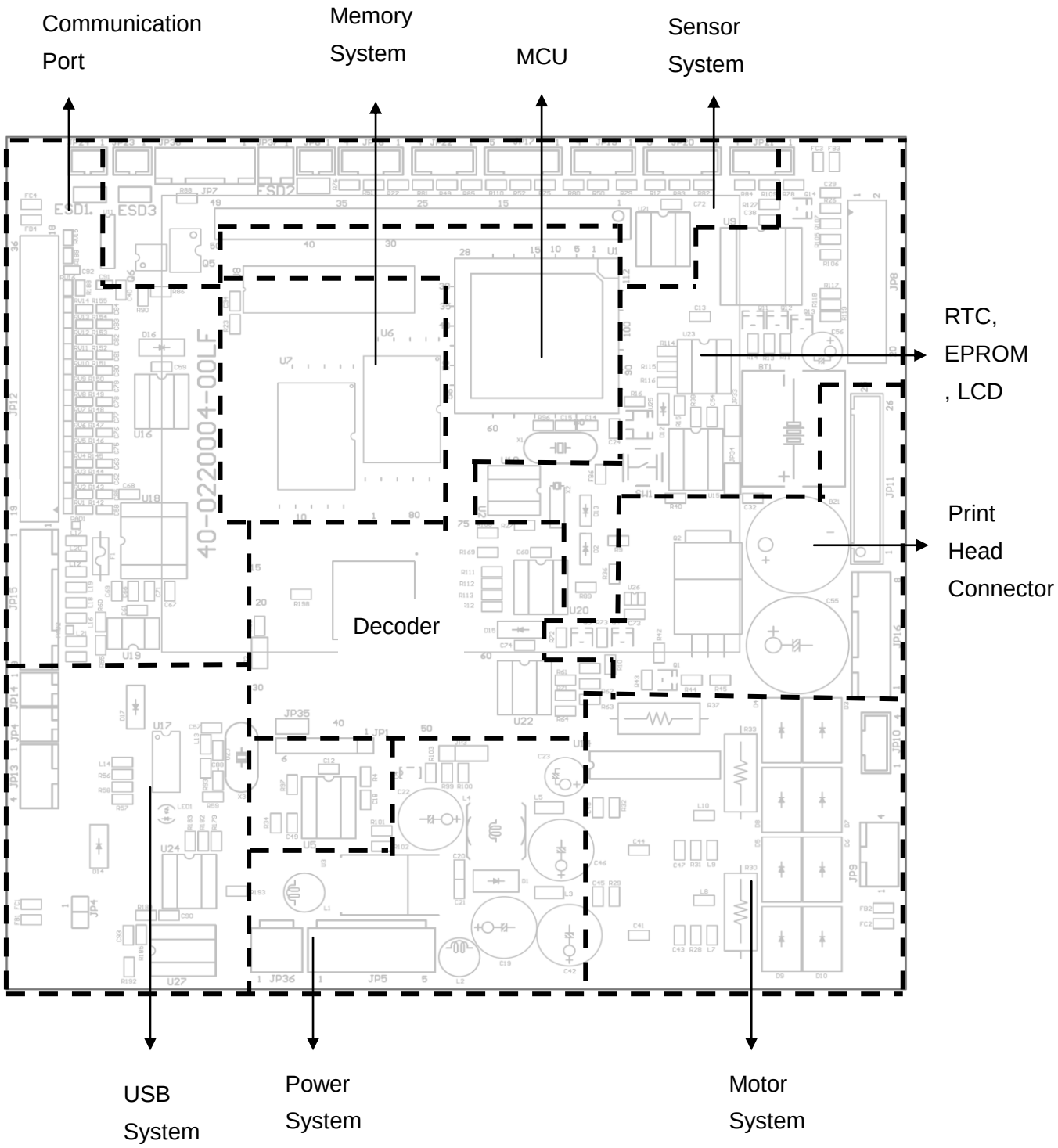


Fig.3.1 System Block of PCB

3.2 MCU PIN Description

A. The Function is follow 40-0220001-02 PCB version.

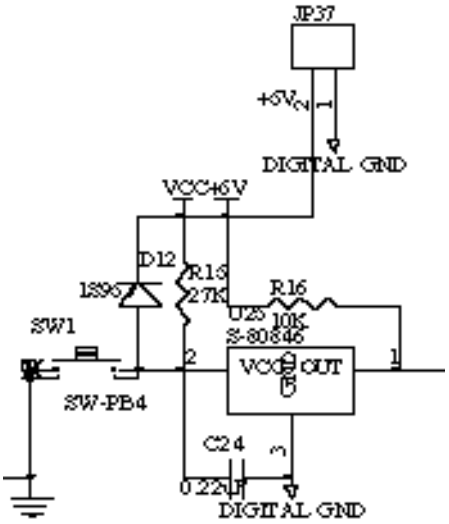
Port	I/O	High	Low	Function	Instruction
PD0~PD15	I/O			Data D0~D15	Data bus
PC0~PC15	O			Address A0~A15	Address bus
PB0~PB1	O			Address A16~A17	Address bus
PB6~PB9	O			Address A18~A21	Address bus
PB2	O		Active	/RAS	DRAM control signal
PB.3	O		Active	/CASL	DRAM control signal
PB.4	O		Active	/CASH	DRAM control signal
PB5	O	Read	Write	RDWR	DRAM control signal
PA0	I			RXD0	RS232 RX
PA1	O			TXD0	RS232 DX
PA2	I	Active		IRQ0	/Select In
PA3	O			PA3	RS232 CTS
PA4	O			TXD1	TPH Data In
PA5	O			SCK1	TPH Clock
PA6	O		Active	/CS2	CS2
PA7	O		Active	/CS3	CS3
PA8	I	Active		IRQ2	Centronic port /AF
PA9	I		Active	IRQ3	USB interrupt
PA10	O		Active	/CS0	CS0
PA11	O		Active	/CS1	CS1
PA12	O		Active	/WRL	Write Low Byte
PA13	O		Active	/WRH	Write High Byte
PA14	O		Active	/RD	Read
PA15	O		Active	PA15	TPH Latch
PE0	O		Active	PE0	TPH Strobe 1
PE1	O		Active	PE1	TPH Strobe 2
PE2	O		Enable	PE2	LED 1 (L1)
PE3	O		Active	PE3	TPH Power Enable
PE4	I		Enable	PE4	Menu Key
PE5	O		Enable	PE5	LED 2 (L2)

PE6	I			TIOC2A	Ribbon Near End Sensor
PE7	O		Enable	PE7	LED 3 (L3)
PE8	I			TIOC3A	Paper Near End Sensor
PE9	I/O			PE9	EEPROM SDO&SDI
PE10	O		Enable	PE10	EEPROM Chip Select
PE11	O			PE11	EEPROM Clock
PE12	I/O			PE12	USB Suspend
PE13	I		Enable	PE13	Pause Key
PE14	I		Enable	PE14	Feed Key
PE15	I		Enable	PE15	Head Sensor
PF0	I			AN0	TPH Voltage
PF1	I			AN1	TPH Temperature
PF2	I		Enable	PF2	Cutter Sensor
PF3	I			PF3	RS232 RTS
PF4	I		Enable	PF4	Peel Sensor
PF5	I	Enable		PF5	Ribbon End Sensor
PF6	I	Enable		PF6	Black Mark Sensor
PF7	I		Enable	PF7	Gap Sensor
NMI	I		Active	NMI	Power Down
/WDTOVF	O		Active		(Reserve)

B. Other define

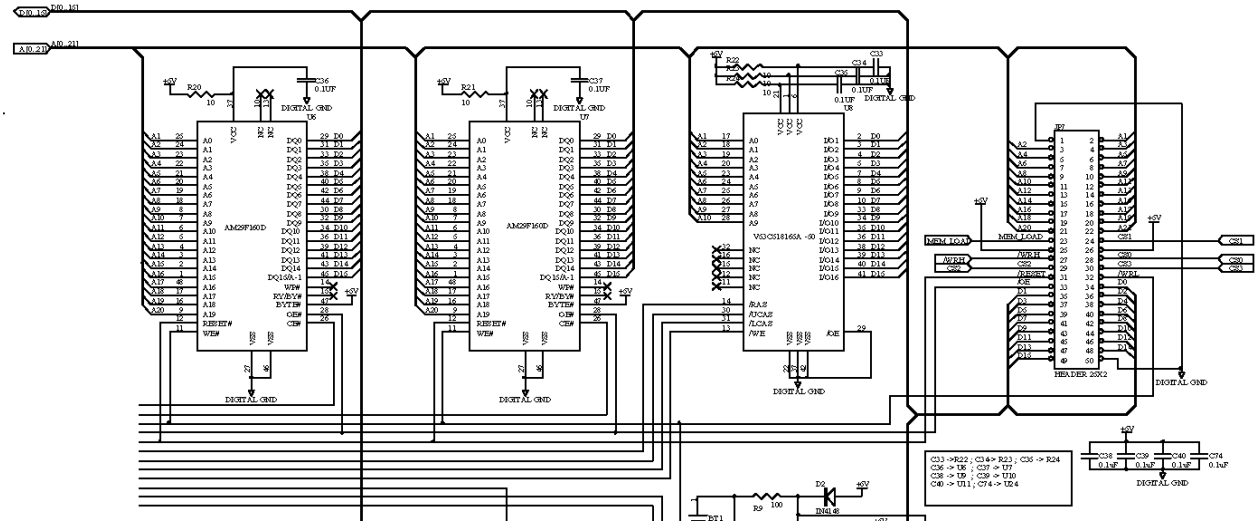
1. Crystal is 7.15909 MHz.
2. Option mode is mode 1. (MD0 is high, MD1 is low.)
3. Clock mode is PLL ON x 4. (MD2 is low, MD3 is high.)
4. Vcc is 5V, AVcc is 5V.

3.3 Reset Circuit



This is reset circuit. The 80846 is voltage detecting IC. It can detect the voltage while the voltage is up to 4.6V；its output signal is high.

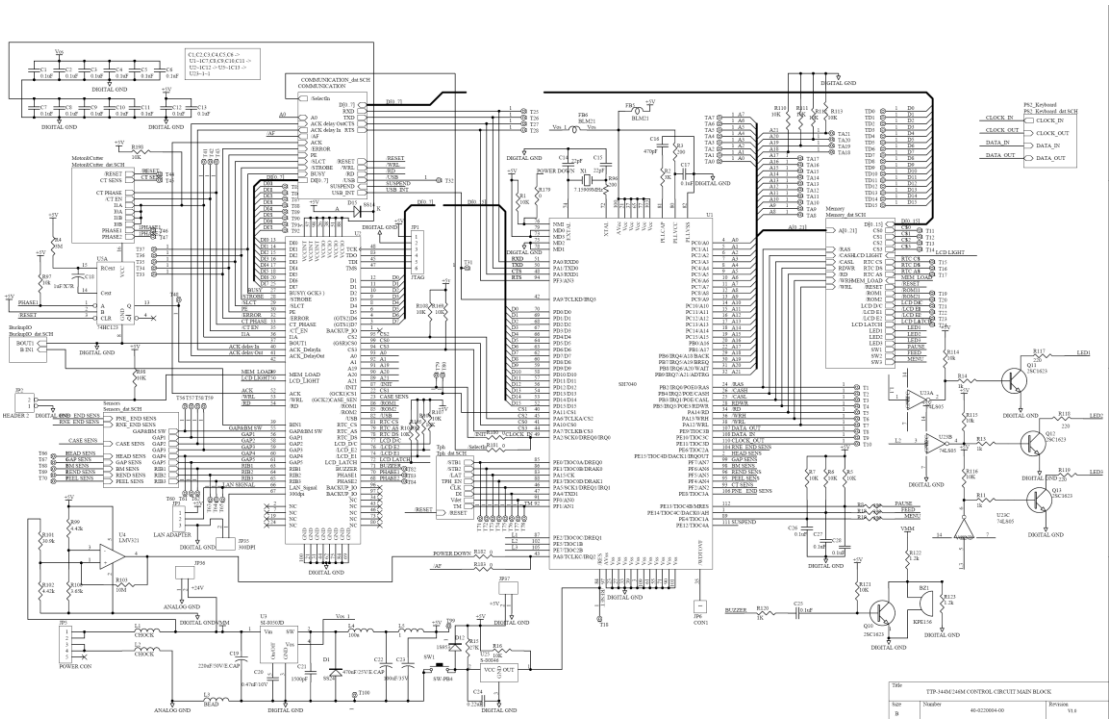
3.4 Memory Circuit



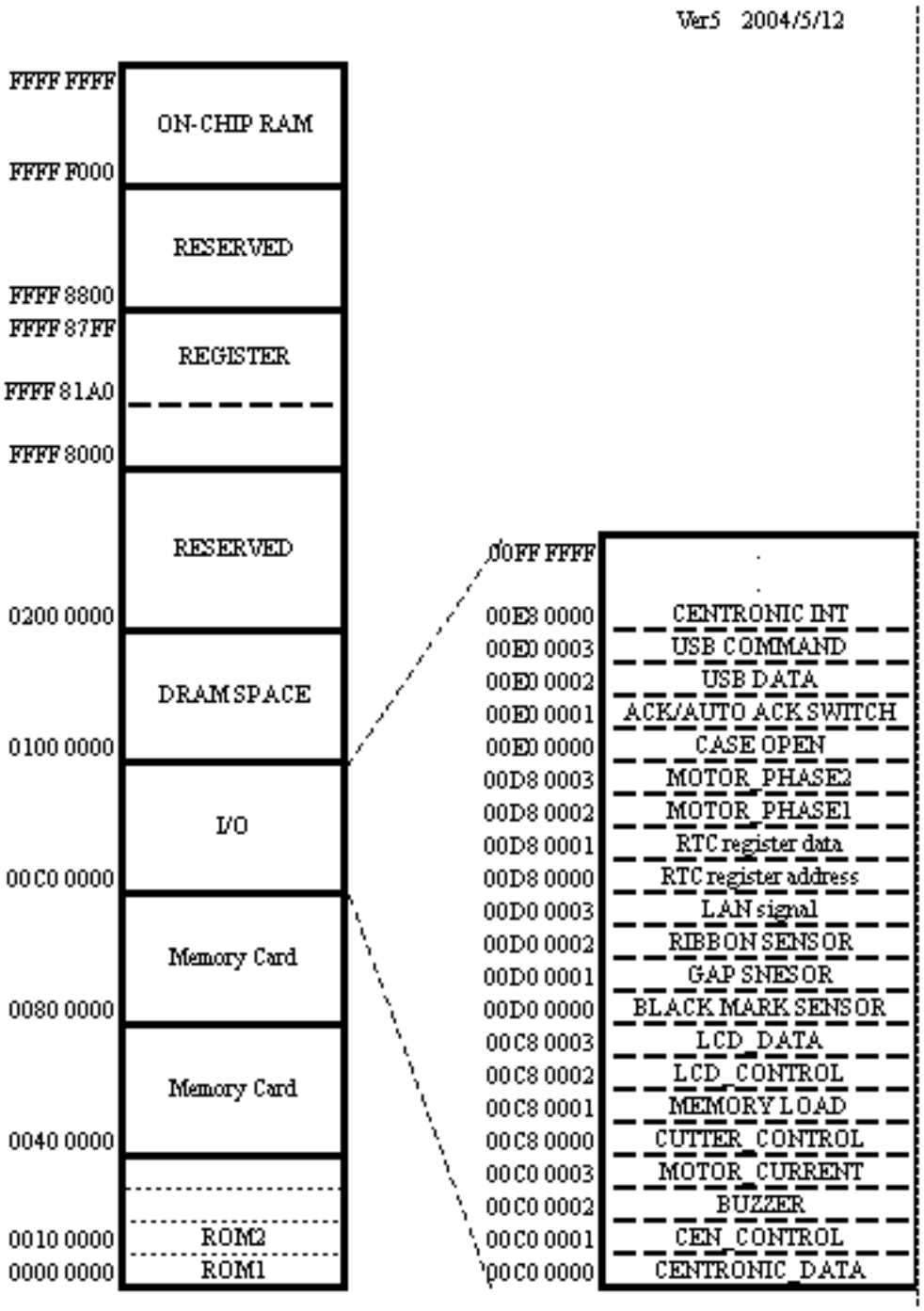
There are 2MB DRAM and 2MB flash ROM on board.

JP7 is memory card connector. The memory card can be expanded to 8MB.

3.5 Decoder Circuit and Memory Map



The CPLD is used to decode the memory and other function.
Please refer to the memory map below.

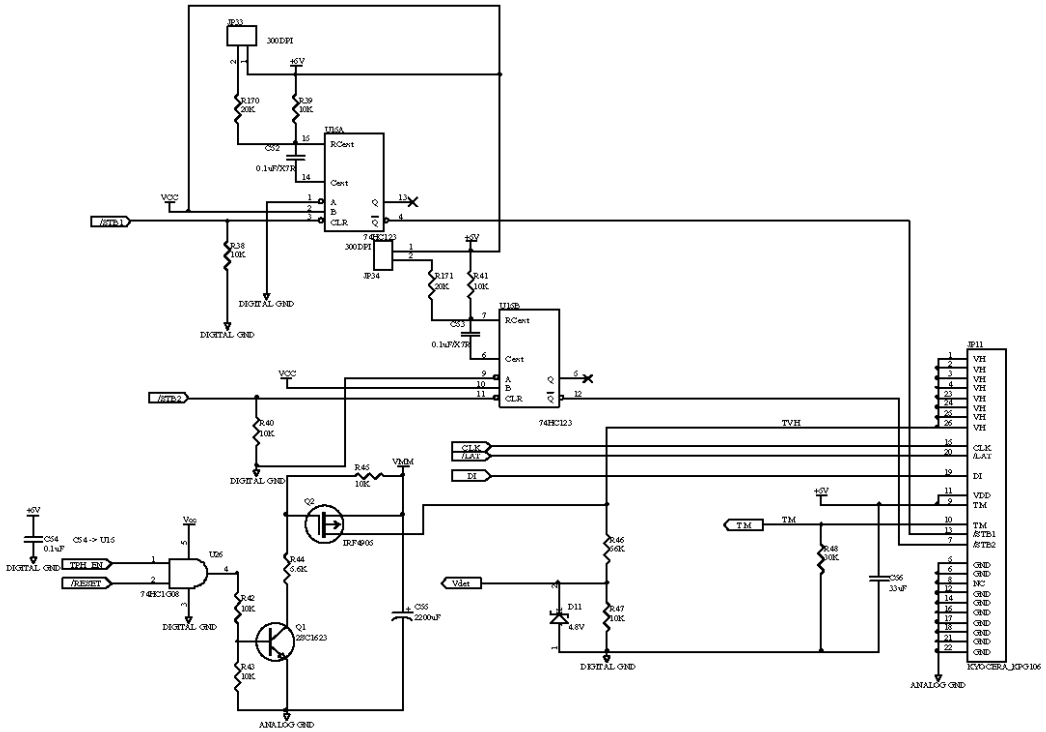

Ver5 2004/5/12
FFFF FFFF
ON-CHIP RAM
FFFF F000
RESERVED
FFFF 8800
FFFF 87FF
REGISTER
FFFF 81A0
FFFF 8000
RESERVED
0200 0000
DRAM SPACE
0100 0000
I/O
00C0 0000
Memory Card
0080 0000
Memory Card
0040 0000
0010 0000
ROM2
0000 0000
ROM1
00FF FFFF
00E8 0000
CENTRONIC INT
00E0 0003
USB COMMAND
00E0 0002
USB DATA
00E0 0001
ACK/AUTO ACK SWITCH
00E0 0000
CASE OPEN
00D8 0003
MOTOR_PHASE2
00D8 0002
MOTOR_PHASE1
00D8 0001
RTC register data
00D8 0000
RTC register address
00D0 0003
LAN signal
00D0 0002
RIBBON SENSOR
00D0 0001
GAP SNESOR
00D0 0000
BLACK MARK SENSOR
00C8 0003
LCD_DATA
00C8 0002
LCD_CONTROL
00C8 0001
MEMORY LOAD
00C8 0000
CUTTER_CONTROL
00C0 0003
MOTOR_CURRENT
00C0 0002
BUZZER
00C0 0001
CEN_CONTROL
00C0 0000
CENTRONIC_DATA

Memory Map

Address	Name	Bit	Bit define	Status
00C00000	Centronic data	Bit 0~ Bit7		
00C00001	Centronic control	Bit 0	PE	Low: Paper error
				High: Normal
		Bit 1	/ERROR	Low: Normal
				High:Printer error
		Bit 2	/SELECT	Low:Not Select
				High: Select
00C00002	BUZZER			Vibration
00C00003	Motor current control	Bit 0	I0A	Low: Power on
		Bit1	I1A	High: Power off
		Bit 2	I0B	
		Bit 3	I1B	
00C80000	Cutter control	Bit 0	Enable	Low: Power off
				High: Power on
00C80001	Memory load	Bit 0	Enable	Low: Update mode
				High: Normal type
00C80002	LCD control	Bit 0	LCD CS1	Low:
				High: enable
		Bit 1	LCD CS2	Low:
				High: enable
		Bit 2	LCD D/I	Low: Command
				High: Data
		Bit 3	LCD Light	High:on
				Low:off
00C80003	LCD data	Bit0 ~ Bit7		
00D00000	Black Mark snesor val	Bit0~ Bit4		
00D00001	Gap snesor value	Bit0 ~ Bit4		
00D00002	Ribbon sensor value	Bit0 ~ Bit2		
00D00003	Lan signal	Bit 0	Enable	Low: disable
				High: enable
00D80000	RTC Address	Bit0 ~ Bit7		
00D80001	RTC data	Bit0 ~ Bit7		
00D80002	motor phase1	Bit 0		Low: low
				High: high
00D80003	motor phase2	Bit 0		Low: low
				High: high
00E00000	Case open sensor	Bit 0		Low: Close
				High: Open
00E00001	Ack/Auto Ack	Bit 0		Low : Auto Ack
				High: Control by firmware
00E00002	USB data	Bit 0~7		
00E00003	USB command	Bit 0~7		
00E80000	Centronic Storb	Bit 0		Low is having new data

Definition of other decode function

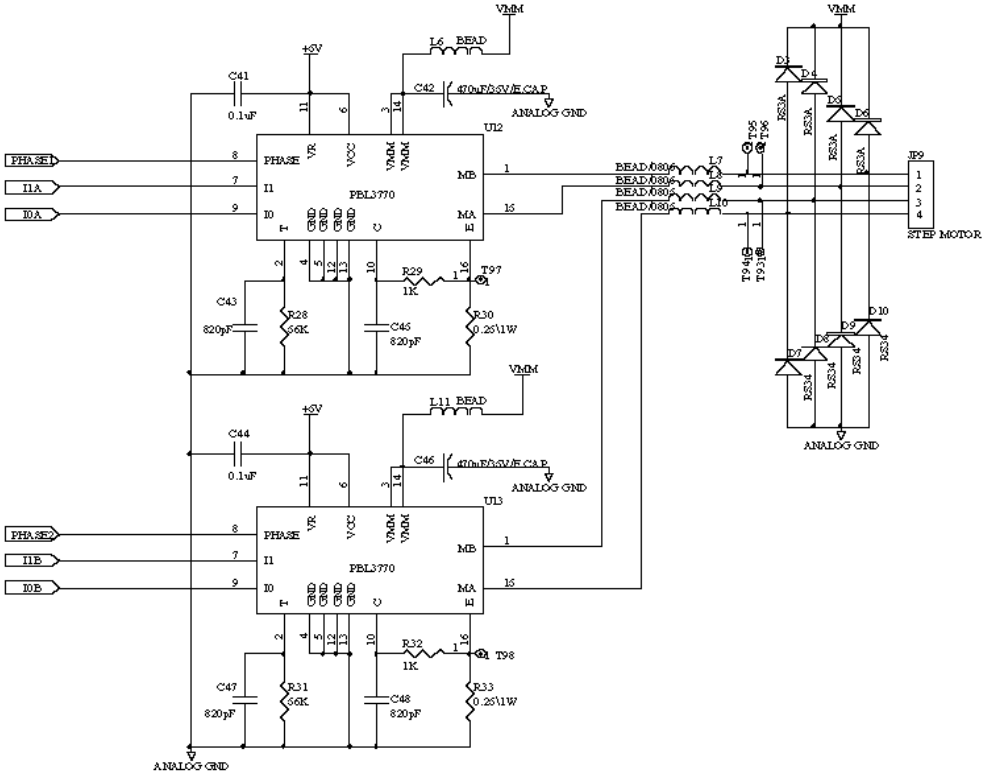
3.6 Print Head Circuit



STB1, and STB2 are the print head heating signal. There is a limit for RC heating time of U15 (74HC123), it can avoid the print head over-heating.

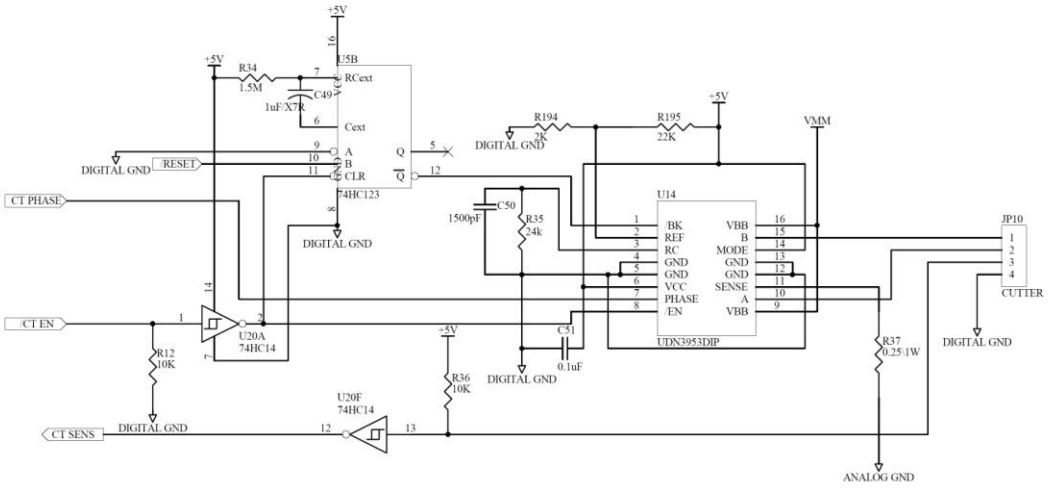
U26 is used to protect print head and avoid the current appears in the improper time.

3.7 Motor Circuit



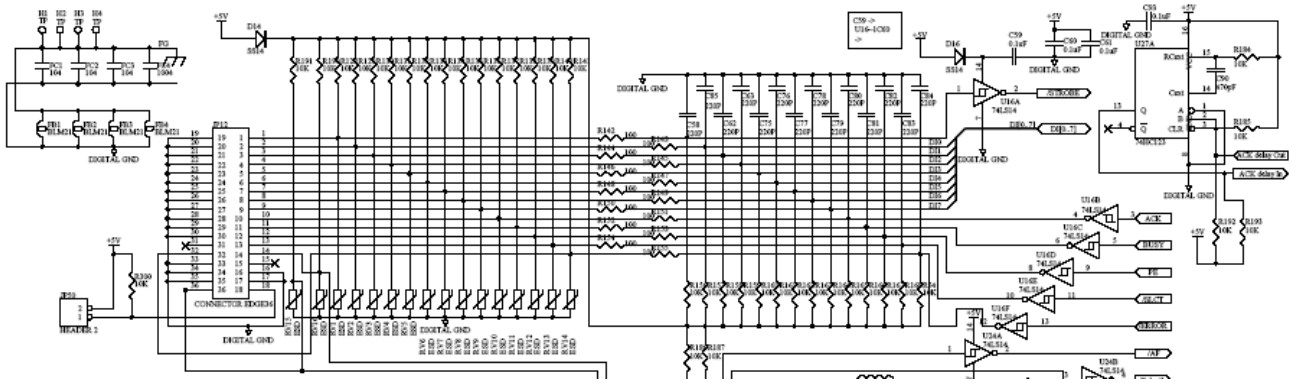
This is motor circuit. U12 and U13 are drivers to control the bipolar stepping motor by using full step control method

3.8 Cutter Circuit



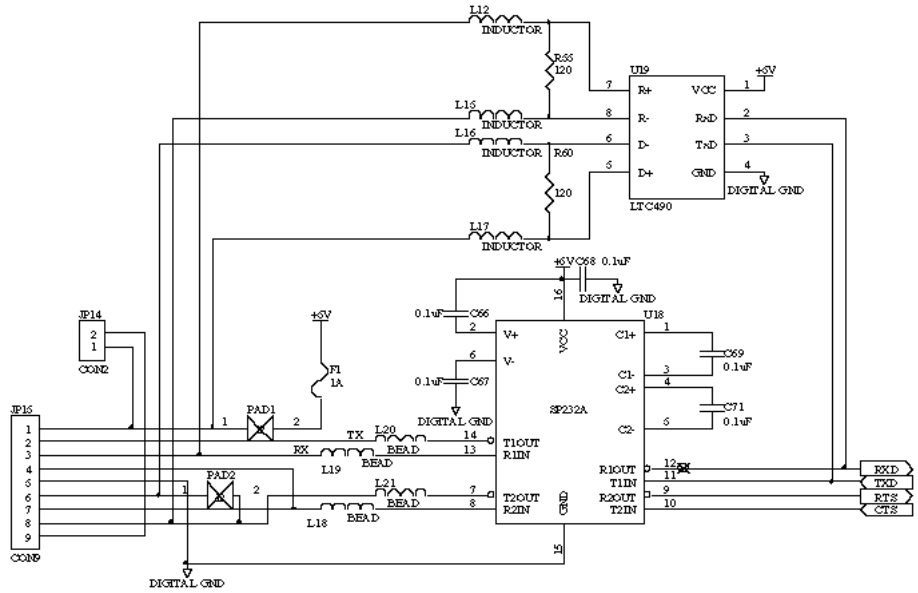
U15B (74HC123) controls the breaking of U14. U14 is the driver of cutter's DC motor.

3.9 Parallel Port Circuit



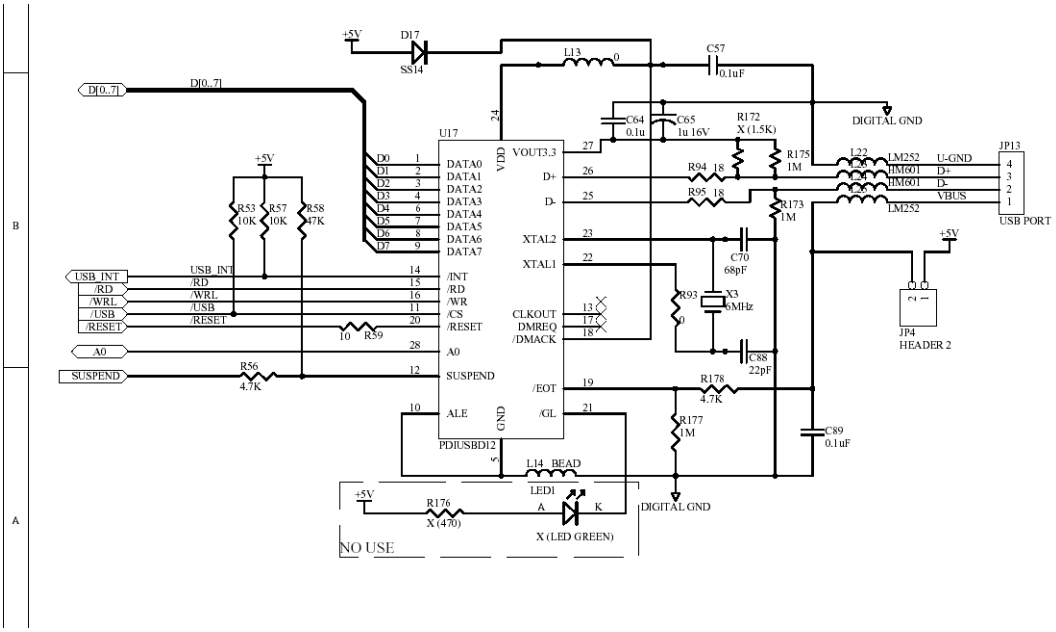
Centronics port is SPP mode and one-way communication.

3.10 Serial Port Circuit



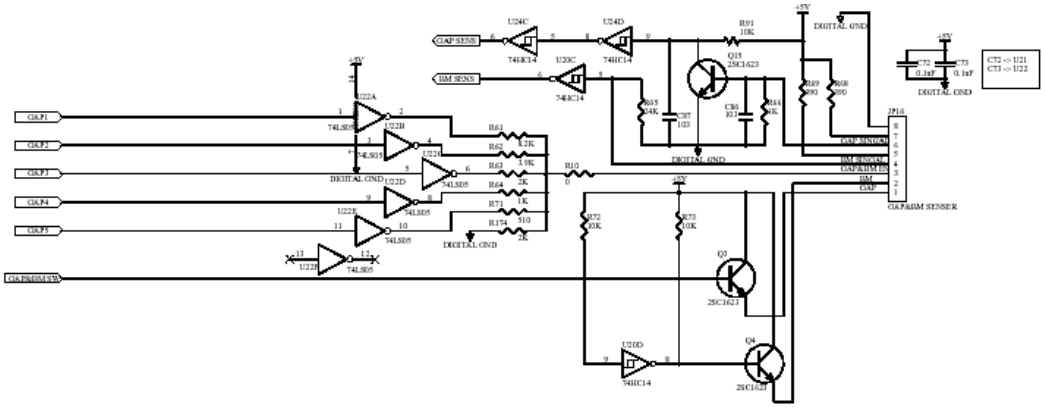
U18 (SP232A) is RS232 asynchronous communication driver IC.
U19 is used for industrial long-distance asynchronous communication；U19 is optional for RS-422/485.

3.11 USB Circuit



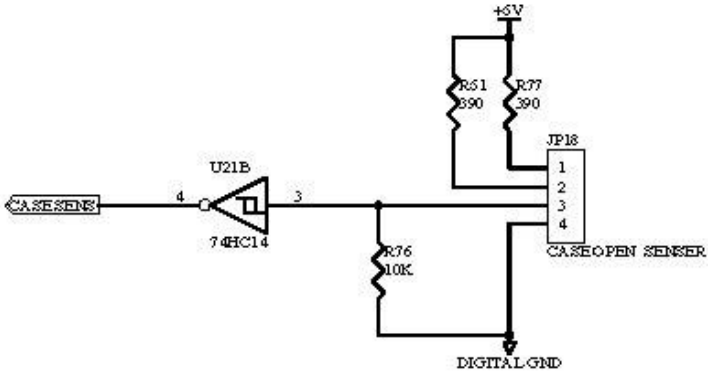
This is USB circuit. This is standard USB1.1.

3.11.1 Gap/Black Mark sensor



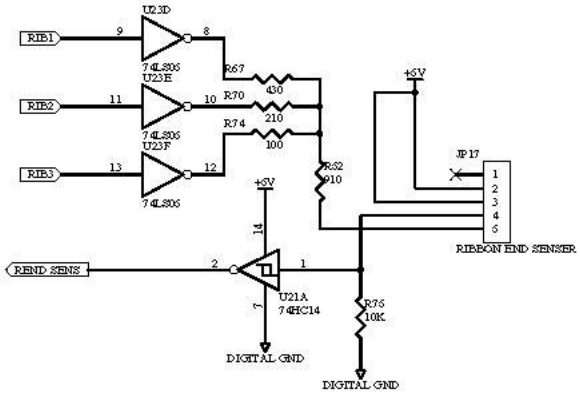
1. The gap sensor is see-through sensor with 32 levels.
2. Black mark sensor is reflective sensor with 32 levels.
3. The GAP_ SENS signal is" HIGH" when the gap sens detected gap; the BM_SENS signal is "HIGH" when the block mark sens detected block mark.
4. The gap sensor activates when GAP& Black mark SW signal is **high**; the black mark sensor activates when GAP& BM_SW signal is **low**.

3.11.2 Case Open Sensor



This is case open sensor circuit. Case open sensor is a see-through sensor. The case opens when the CASE SENS signal is **low;** the case closes when the CASE SENS signal is **high.**

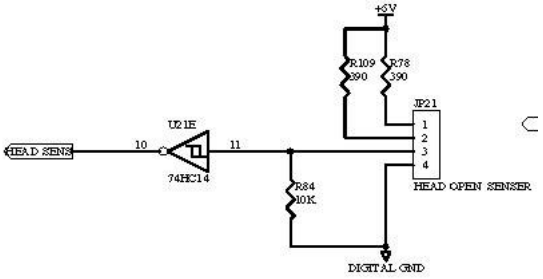
3.11.3 Ribbon End Sensor



Ribbon end sensor is a see-through sensor.

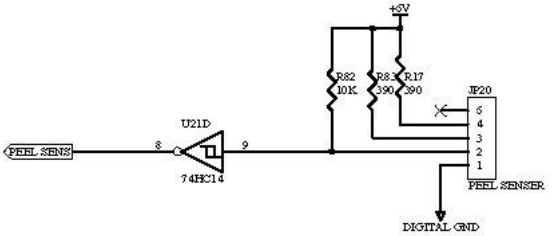
1. There are 8 levels of adjustment tension to adapt different ribbons.
2. The REND SENS signal is high when there is ribbon inside; the REND SENS signal is low when there is no ribbon.
3. The ribbon end tape should be transparent.

3.11.4 Head Open Sensor



This is the see-through sensor. The HEAD SENS signal is "High" when print head opens; The HEAD SENS signal is "Low" when the print head closes.

3.11.5 Peel-off Sensor

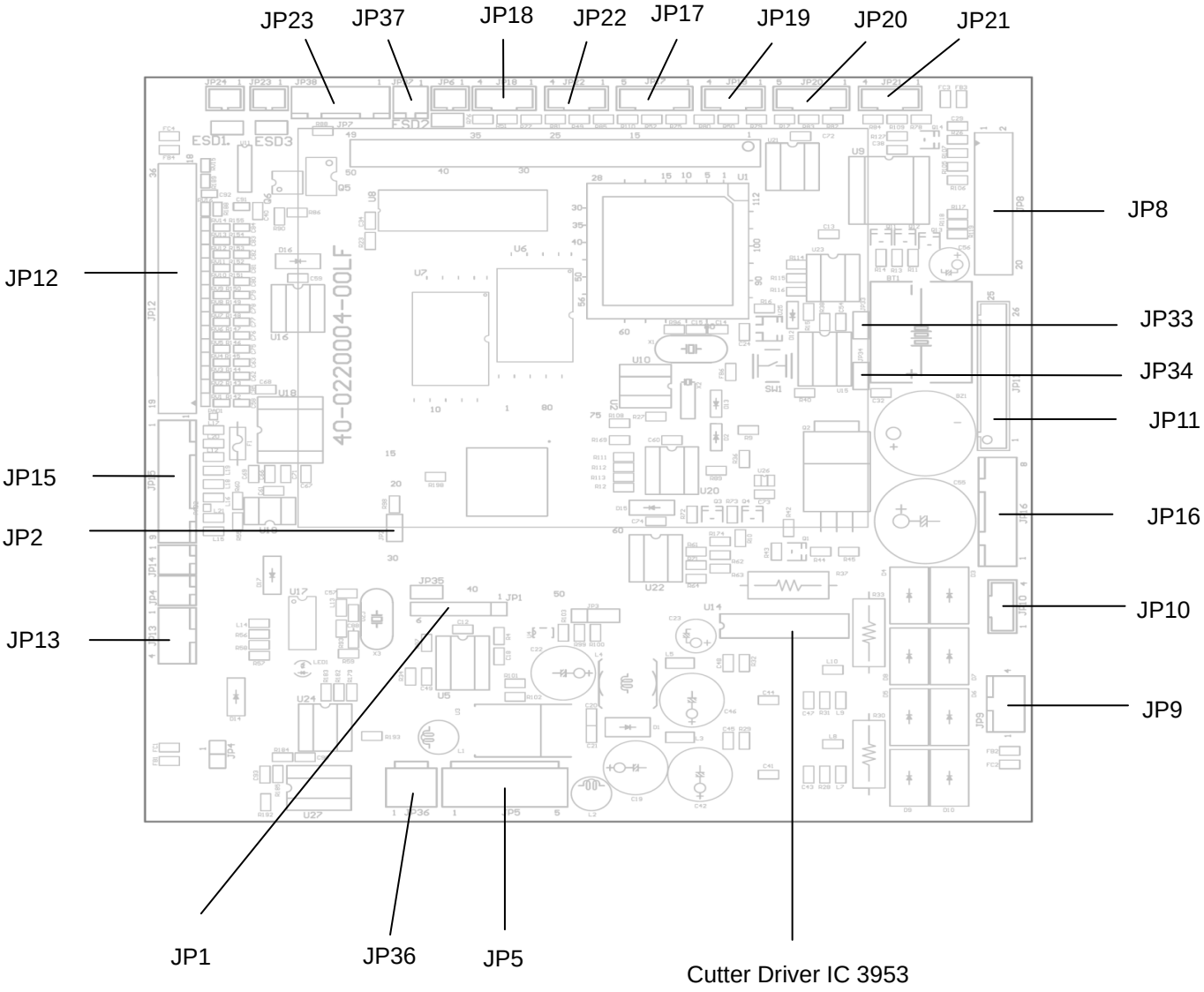


This is a reflective sensor. The PEEL SENS signal is high when there is label below the sensor; the PEEL SENS signal is low when the label is taken away.

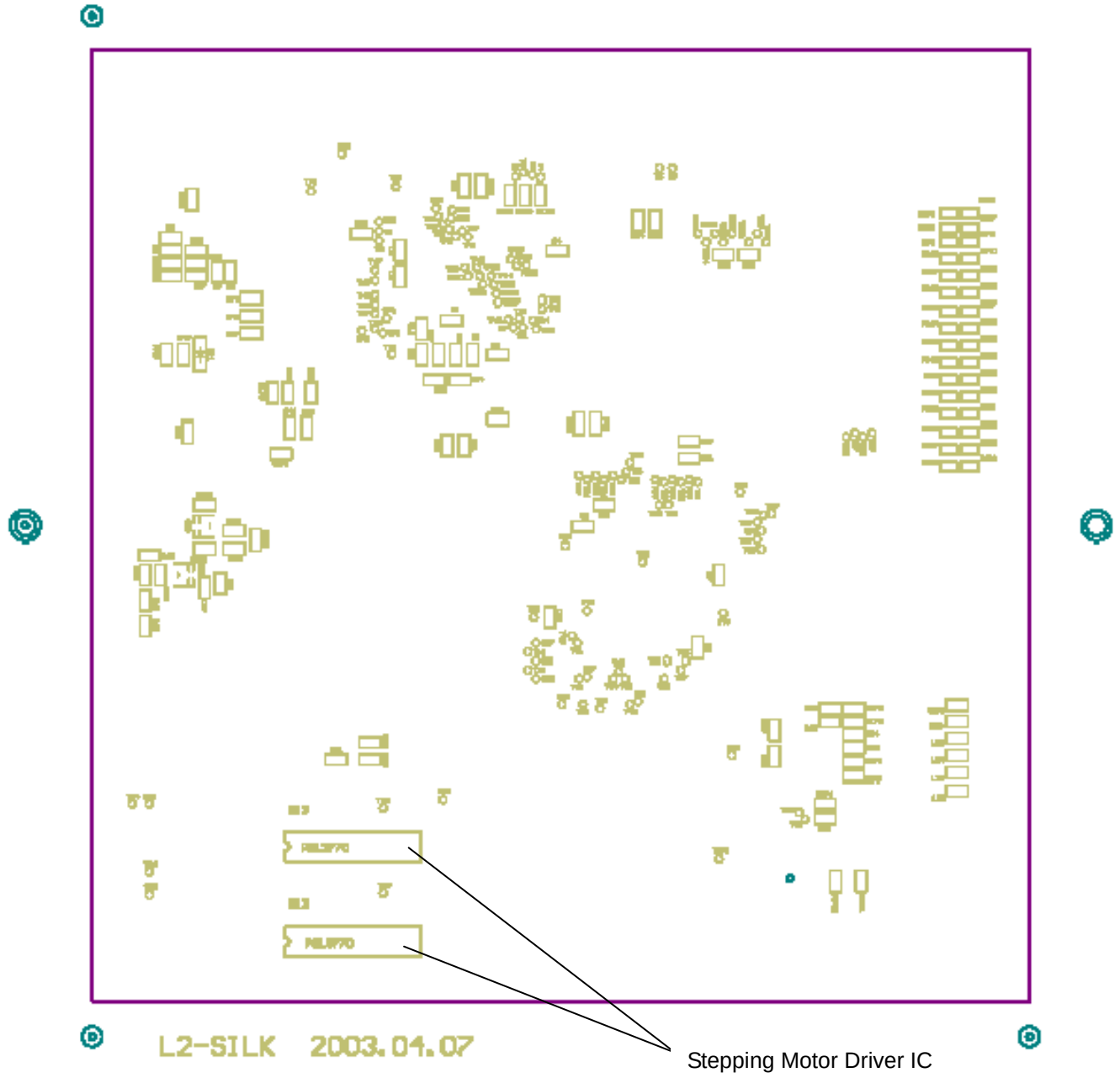
3.12 Summary of PCB connectors

Connector	Description	Remark
JP1	CPLD JTAG connector	For CPLD program update
JP2	Boot memory load jumper	
JP3	Reserved	
JP4	Reserved	
JP5	Power connector	
JP7	Memory card connector	
JP8	LCD module connector	
JP9	Stepping motor connector	
JP10	Cutter module connector	
JP11	TPH connector	
JP12	Centronics port connector	
JP13	USB connector	
JP15	RS-232 connector	
JP16	Gap/black sensor connector	
JP17	Ribbon end sensor	
JP18	Case open sensor	
JP19	Ribbon near end sensor	
JP20	Peel connector	For direct Thermal printer only
JP21	Head open sensor	
JP22	Paper near end sensor	
JP33	300 dpi TPH protect jumper	
JP34	300 dpi TPH protect jumper	
JP35	Reserved	
JP37	5V DC connector	Provide 5V DC, 0.3A
JP38	Reserved	

3.12.1 TTP-246M & 344M PCB Top Side



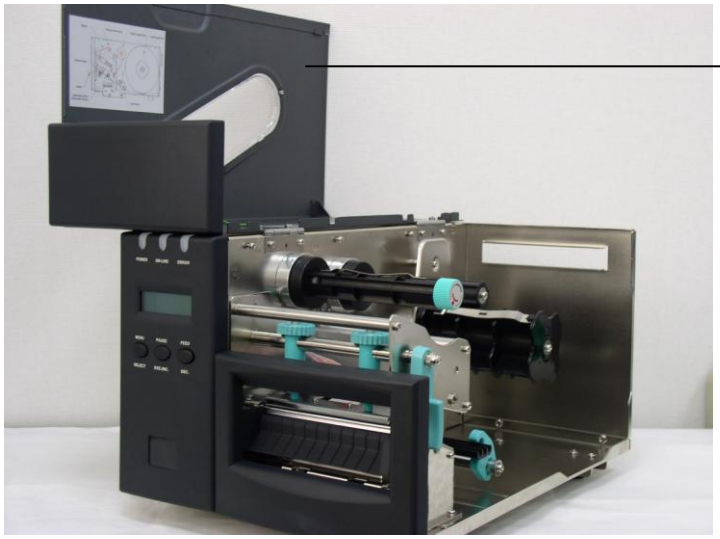
3.12.2 TTP-246M & 344M PCB Bottom Side



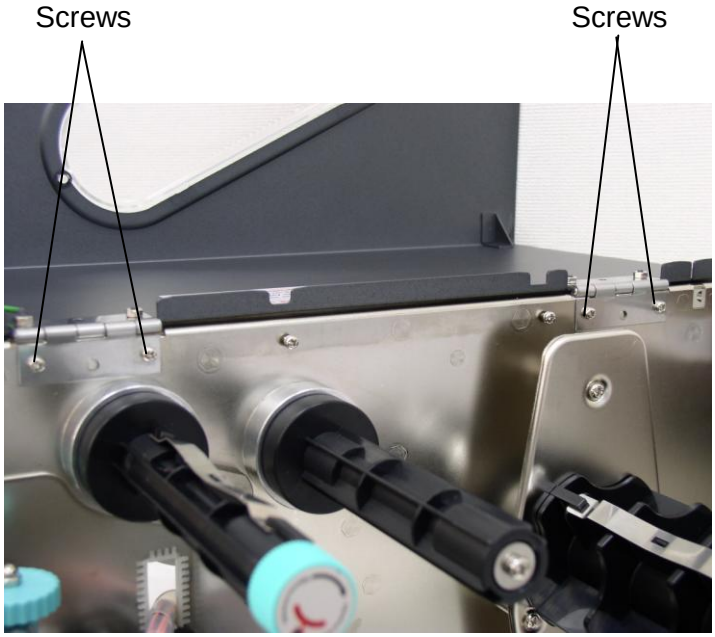
4. Mechanism

4.1 Remove Covers, LCD Panel and Lower Front Panel

1. Open Top Right Side Cover.

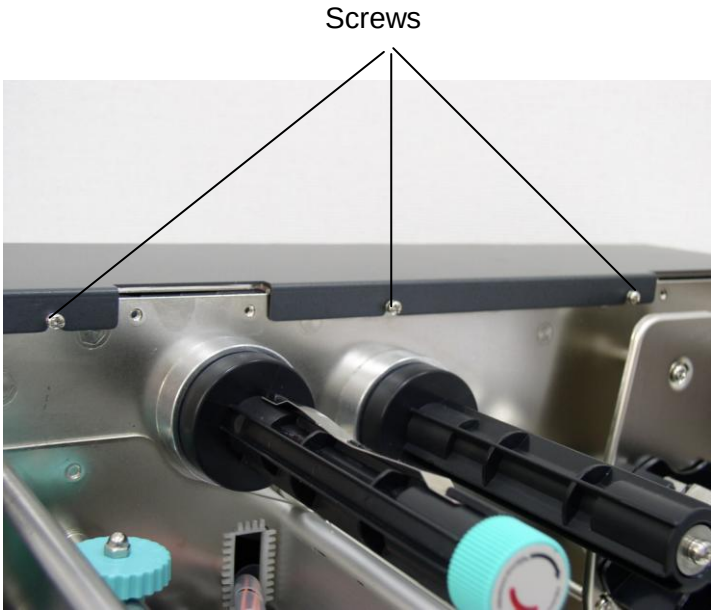


2. Loosen four screws to separate the Top Right Side Cover and Main Frame.



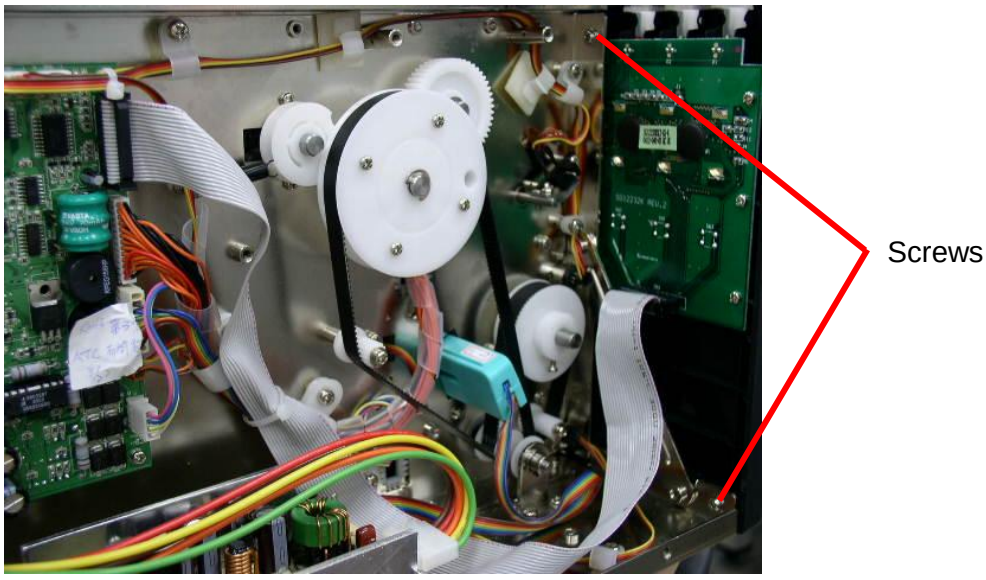
3. Remove Top Right Side Cover.

4. Loosen three screws to separate Main Frame and Left Side Cover.

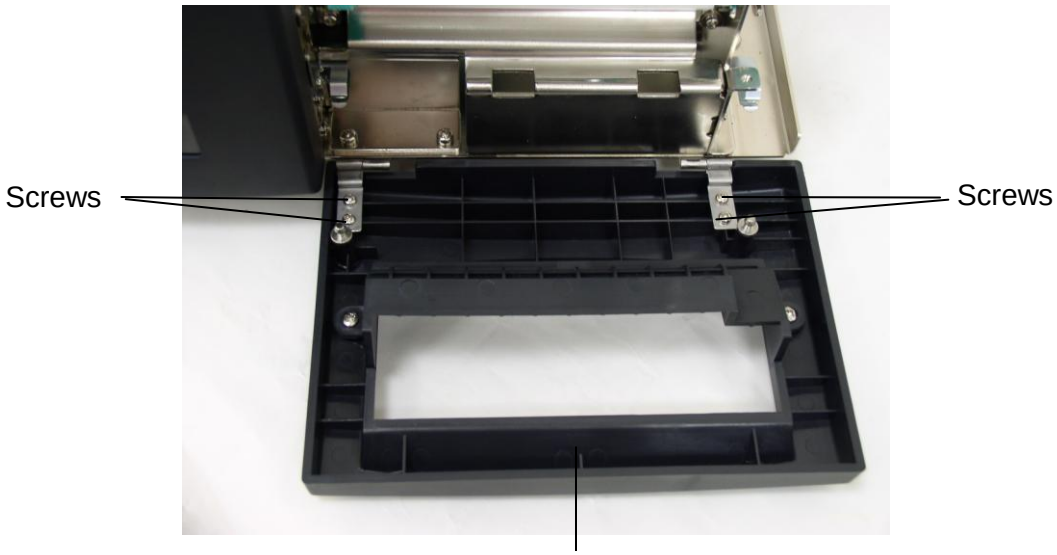


5. Loosen screws on Top Left Side Cover.

6. Remove Left Side Cover.
7. Loosen two screws to separate the LCD panel and Main Frame, remove the connector from LCD panel, and then remove LCD panel.



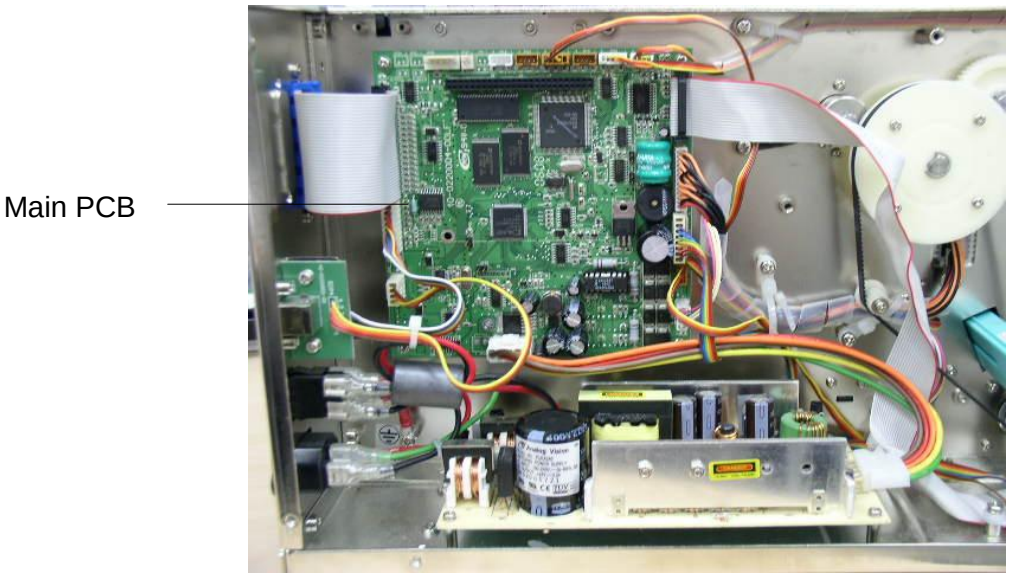
8. Loosen four screws and then remove Lower Front Cover.



9. Reassemble in the reverse procedures.

4.2 Replacing the All Harness on Main PCB

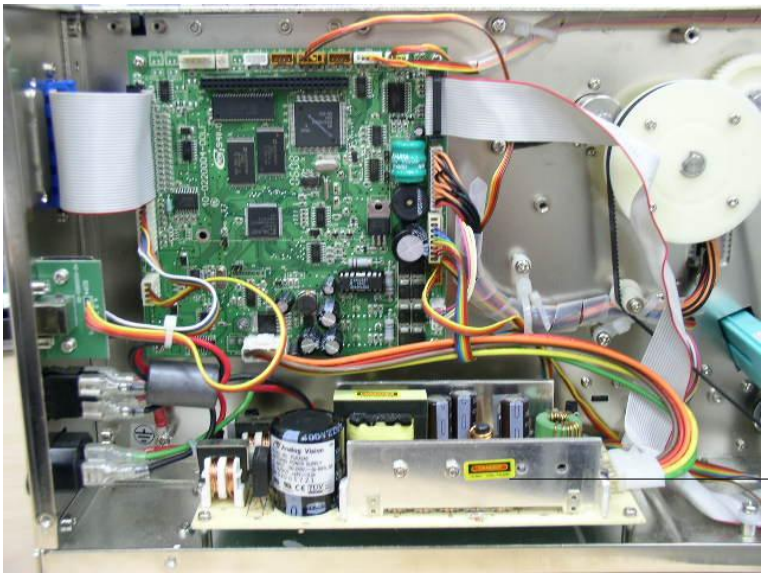
1. Disconnect the printer power cord.
2. Refer to section 4.1 to remove the left side cover.
3. Disconnect all harness.
4. Remove screws on Mainboard and replace the Main PCB.



5. Reassemble in the reverse procedures.

4.3 Replacing Power Supply Unit

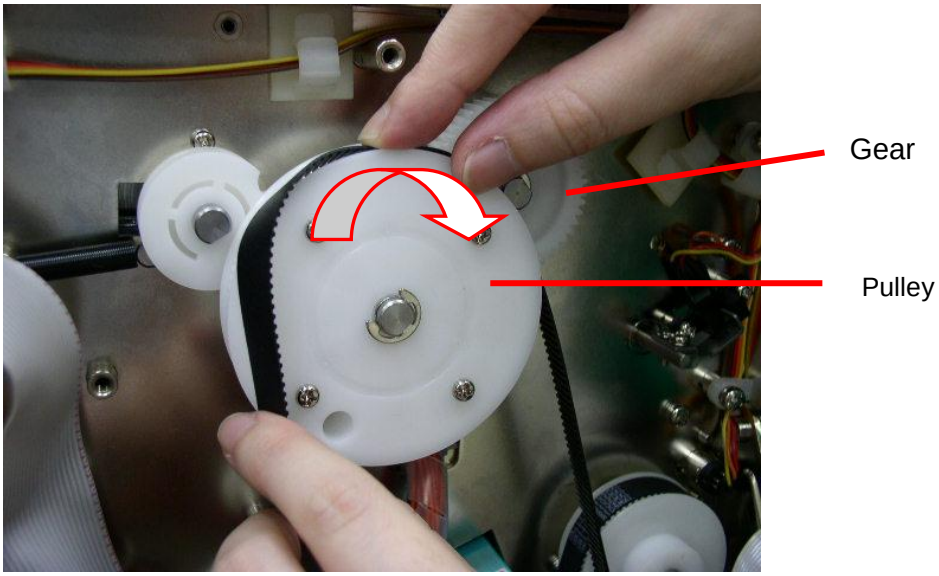
1. Disconnect the printer power cord.
2. Refer to section 4.1 to remove the left side cover.
3. The left side (face to power switch) harness of power switch is red, and the right side harness is black.
4. Disconnect JP5 harness from the main PCB.
5. Disconnect the harness that is connected between power switch and power supply unit.
6. Loosen four screws on power supply unit, which is fixed onto the printer.



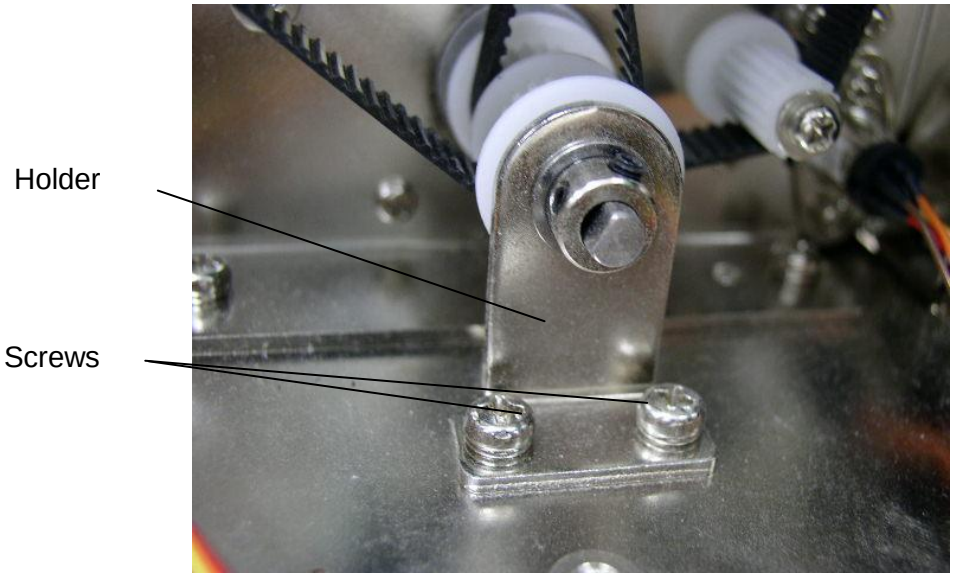
7. Replace Power Supply Unit.
8. Reassemble in the reverse procedure.

4.4 Replacing Belt and Gears

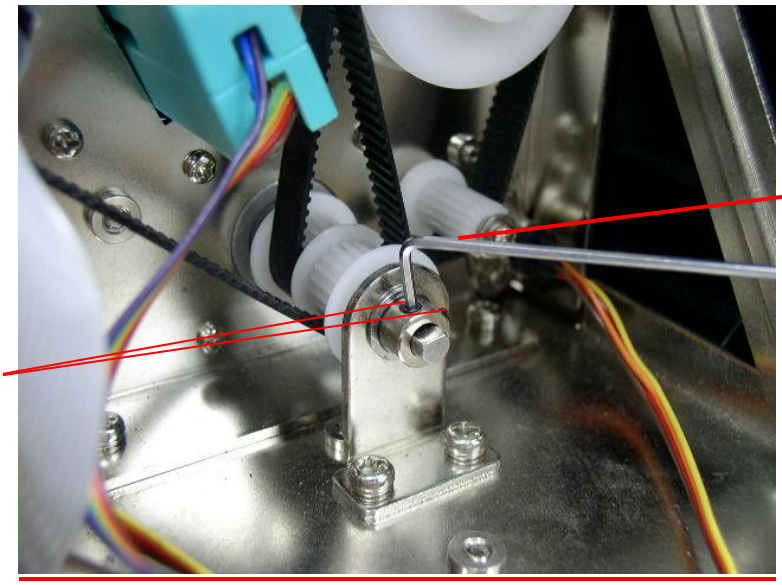
1. Turn off the power.
2. Use left hand to pull the belt, use right hand to turn the gear to your right side in the same time to remove the belt completely.



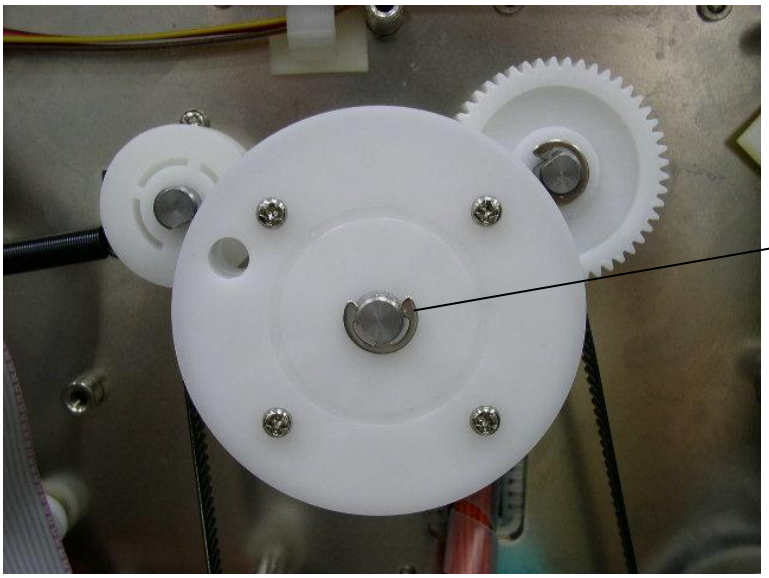
3. Remove the 2 screws of the holder.



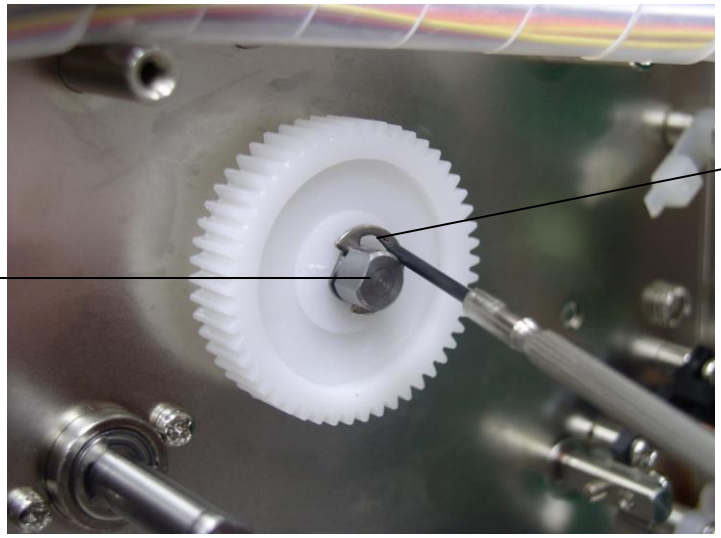
4. Use the **1.5mm hex wrench** to remove the 2 black **Inner hexagon bolt head** of the holder, and then remove the stopper.



5. Remove the belts.
6. Remove the outer E-ring of the spindle. Then move the pulley.



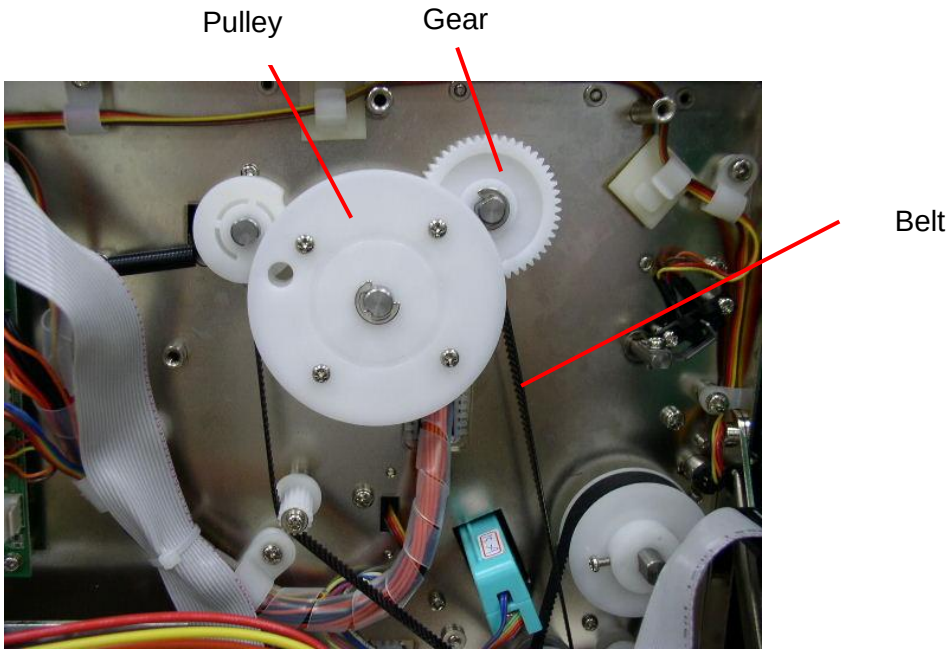
7. Remove the outer E-ring of the Ribbon rewind spindle. Then move the gear.



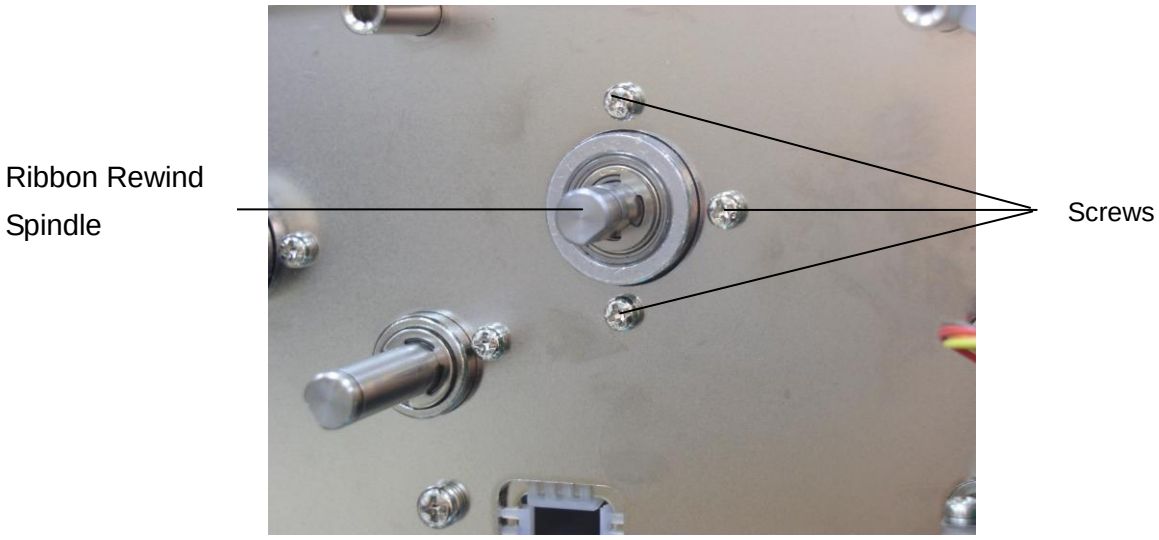
8. Reassemble in the reverse procedures after replacing.

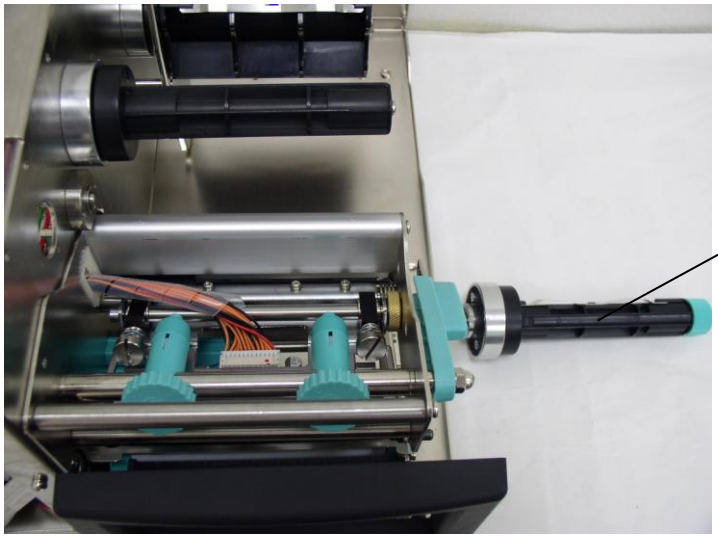
4.5 Replacing Ribbon Rewind Spindle

1. Refer to section 4.1 to remove the left side cover.
2. Refer to section 4.4 to remove the belt, Pulley and gear.



3. Remove the 3 screws. Then, Remove Ribbon Rewind Spindle.

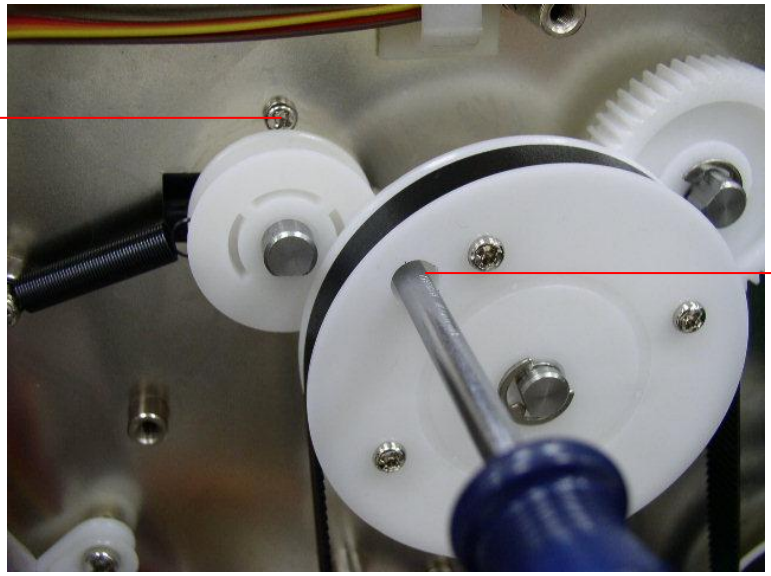


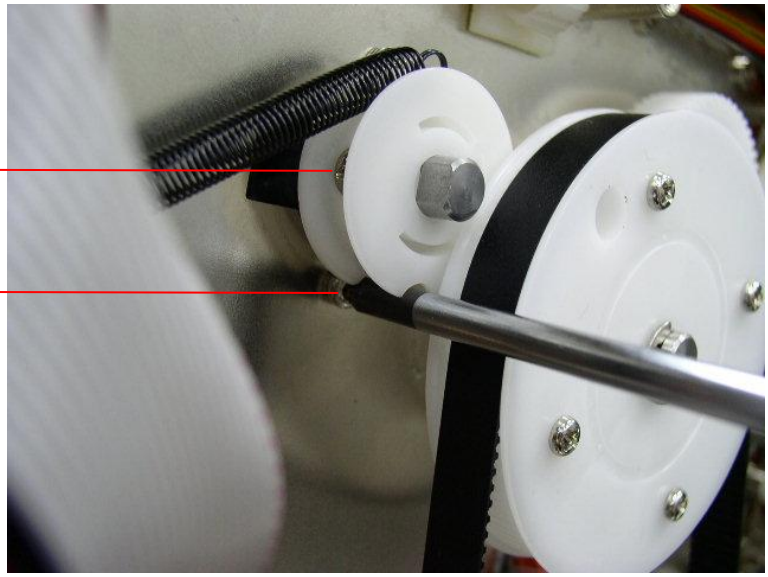


4. Reassemble in the reverse procedures after replacing.

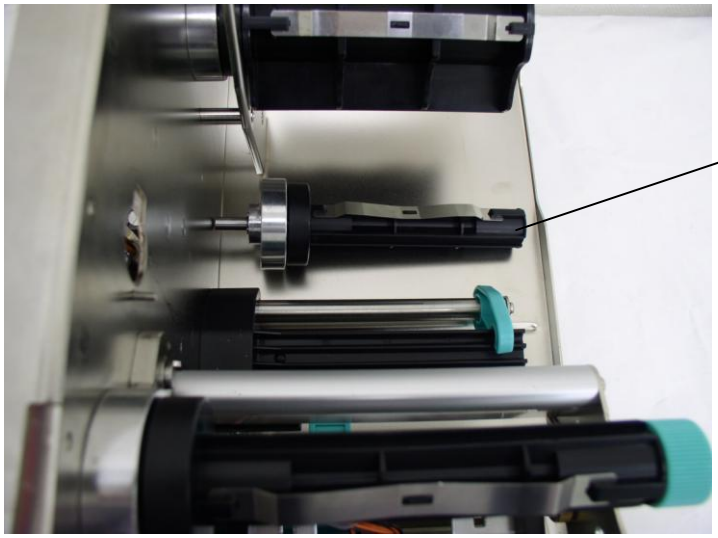
4.6 Replacing Ribbon Supply Spindle

1. Refer to section 4.1 to remove the left side cover.
2. Remove the screw through the hole of the pulley. Then, remove other 4 screws of Ribbon supply spindle.





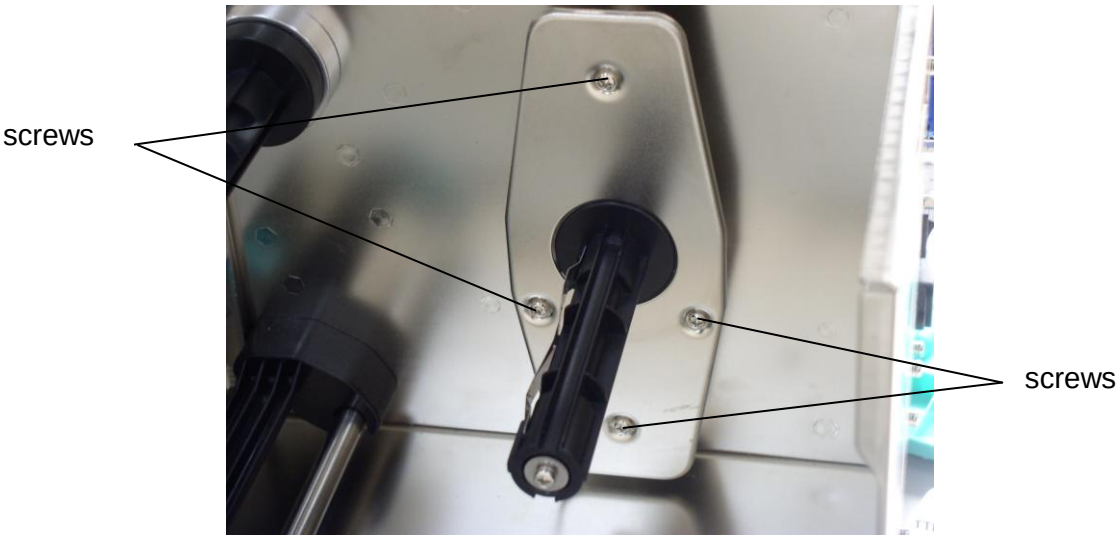
3. Remove Ribbon Spindle.



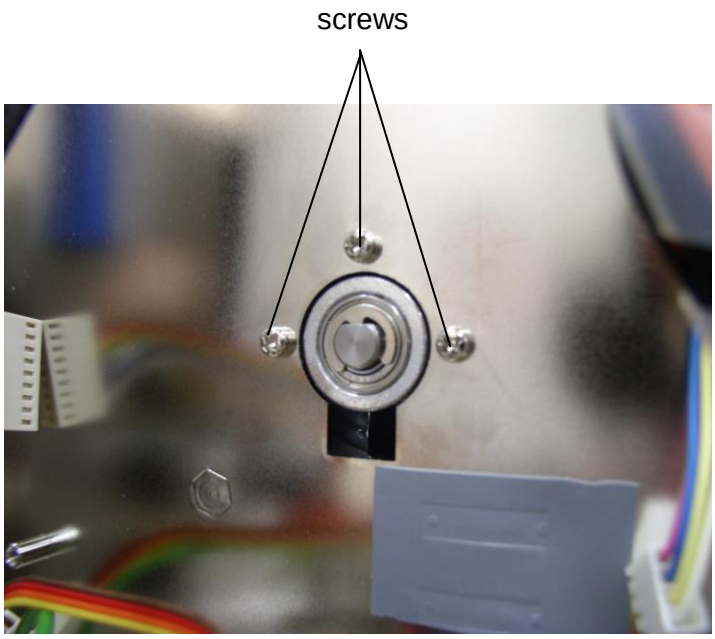
4. Reassemble in the reverse procedures after replacing.

4.7 Replacing Label Supply Spindle

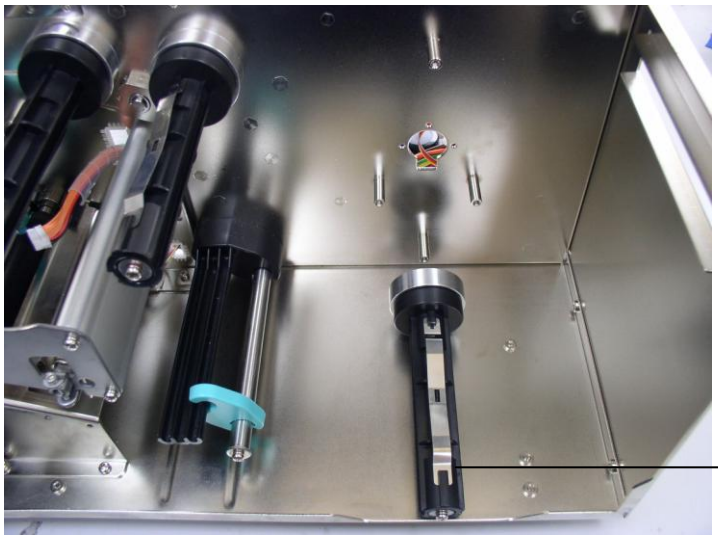
1. Refer to section 4.2 to remove the Main PCB.
2. Remove the 4 screws from the label roll fixing plate.



3. Remove the 3 screws these are used to connect the label supply spindle onto the main frame.



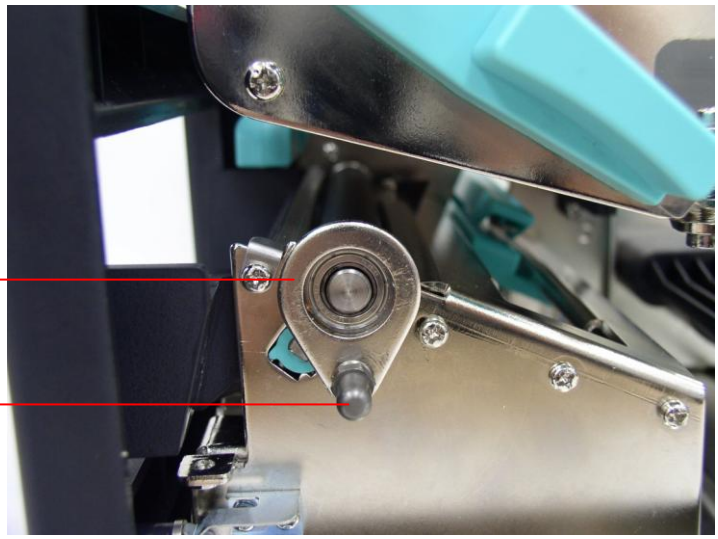
4. Remove the Label Supply Spindle.



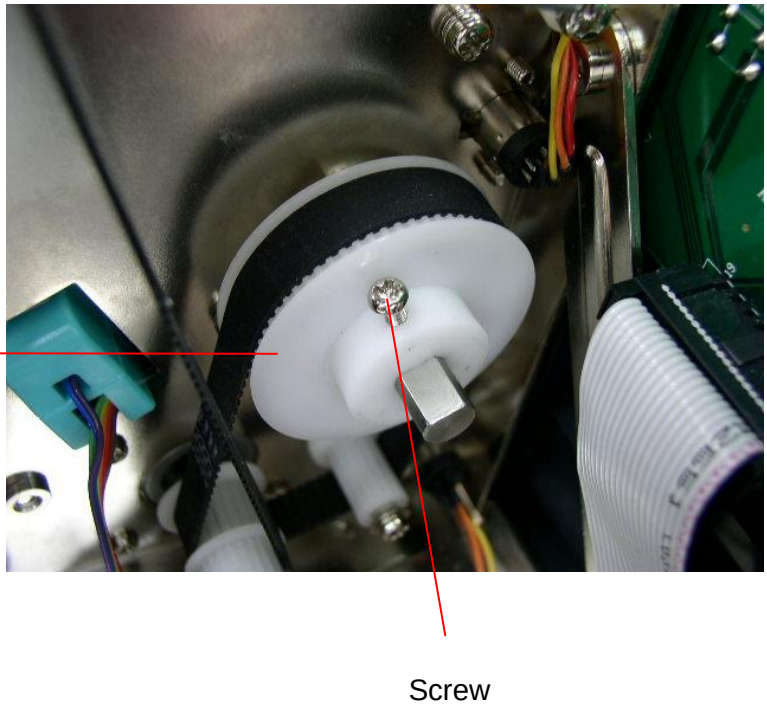
5. Reassemble in the reverse procedures after replacing.

4.8 Replacing Platen

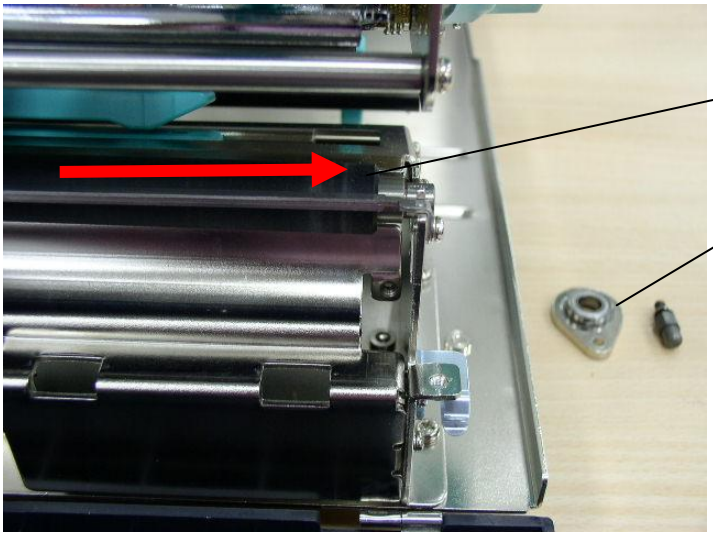
1. Remove Print head lift lever latch and Platen Support Plate.



2. Loosen the 2 screws on the Aluminum-made Pulley.



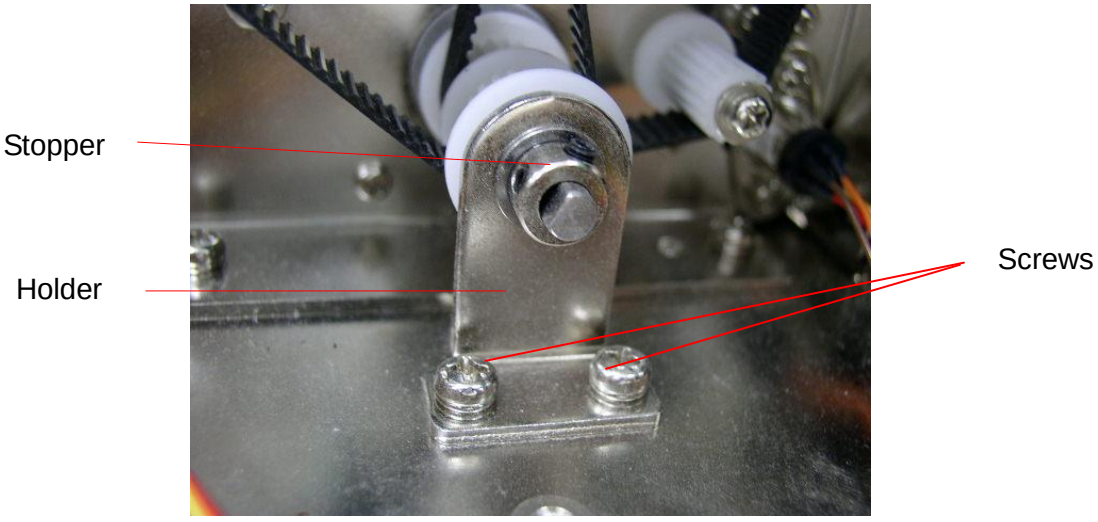
3. Pull the platen to the right side. Remove the left and right shaft bearing on the Platen.



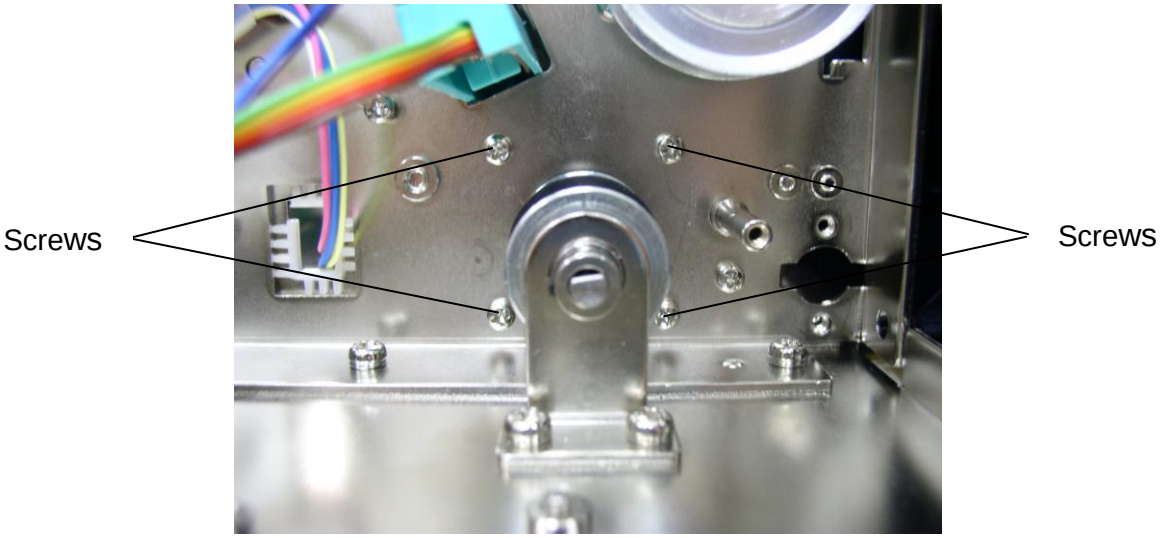
4. Install the bearing on the new Platen.
5. Reassemble in the reverse procedures after replacing.

4.9 Replacing Stepping Motor

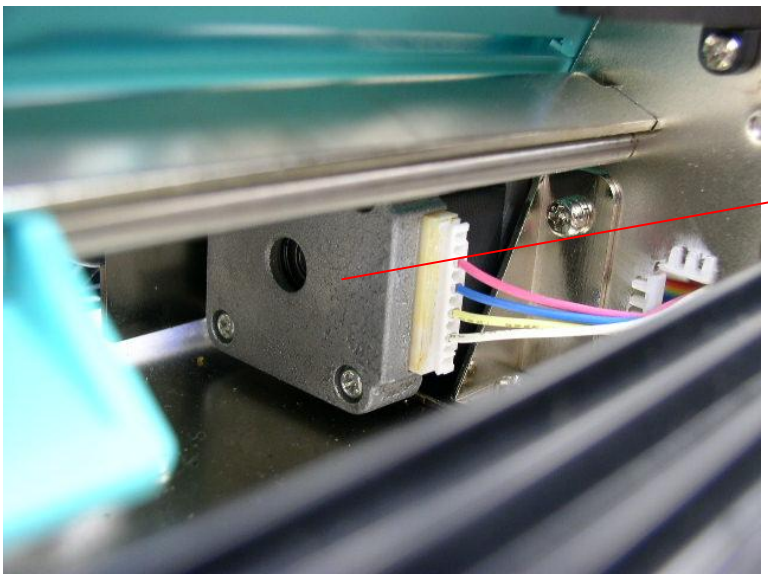
1. Remove Stopper and loosen two screws of Holder.



2. Refer to section 4.4 to remove Belts and Holder.
3. Loosen four fixing screws on the Motor.



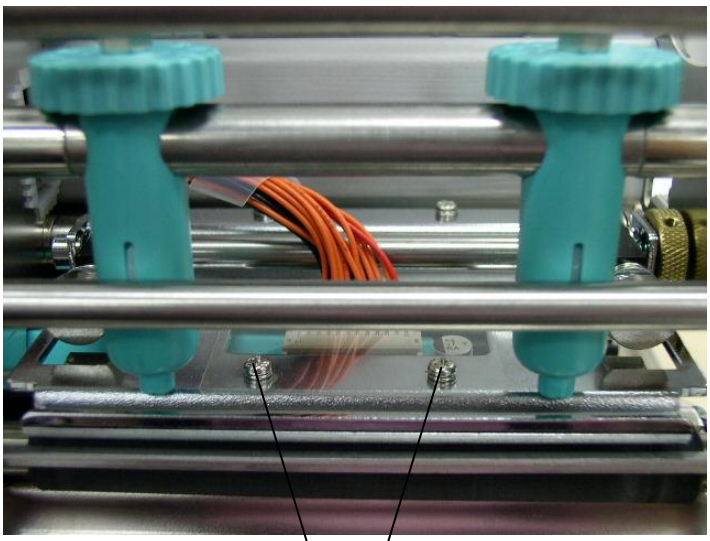
4. Remove stepping motor harness from Main PCB.



5. Use **1.5mm hex wrench** to remove the2 screws on the stepping motor pulley and 2 screws on the stopping.
6. Reassemble in the reverse procedures after replacing.

4.10 Replacing Print Head

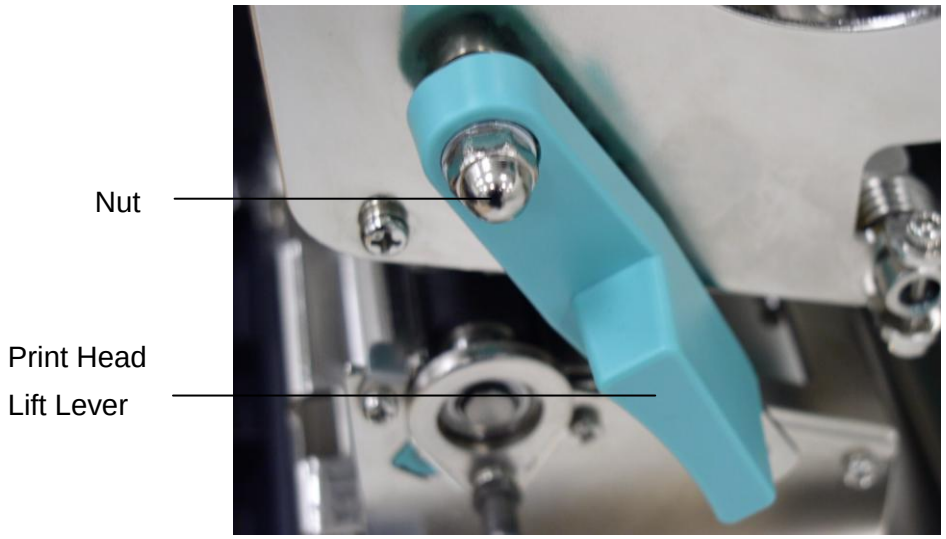
1. Must turn off power while replacing print head, otherwise the damage of print head may occur.
2. Disconnect print head harness
3. Loosen two screws on the Print Head and Print Head Bracket.



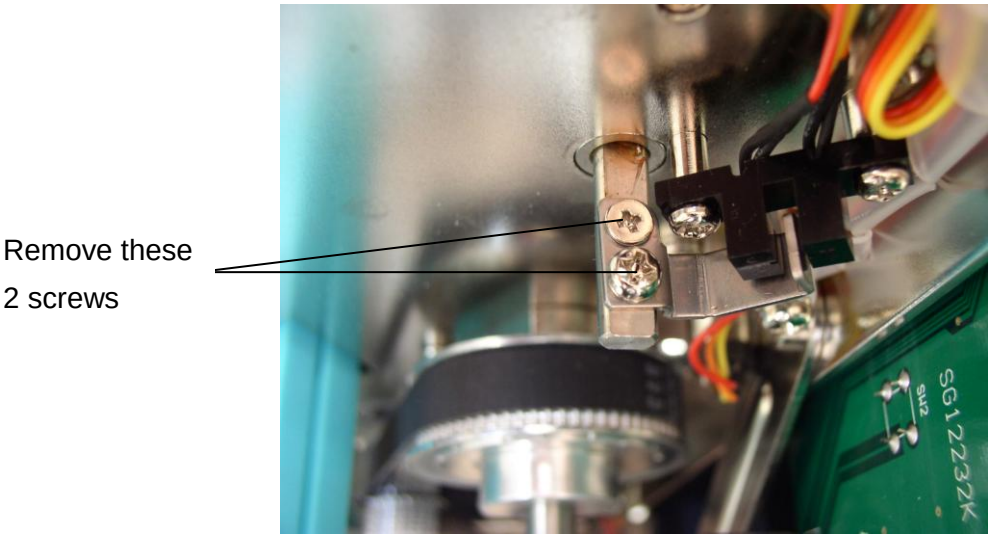
4. **Note: In case if the screws were stripped, do not fix new print head with used screws.**
5. Reassemble in the reverse procedures after replacing.

4.11 Replacing Print Head Adjustment Knob

1. Lift the print head up.
2. Remove the Nut from the Print Head Lift Lever. Then remove the Print Head Lift Lever.

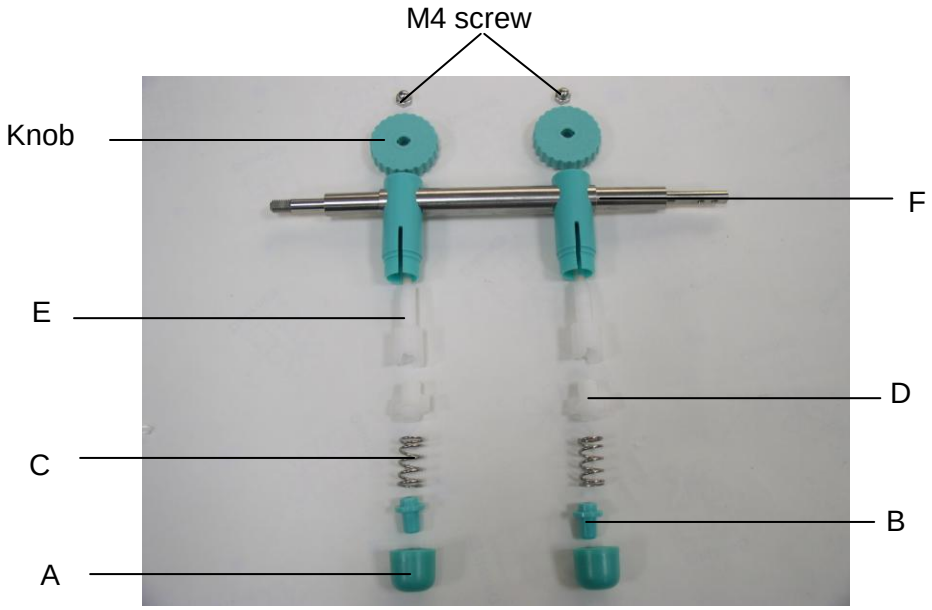


3. Remove the 2 screws these are on the TPH switch plate.



4. Remove the 4 screws these are on the Right Side Fixing Plate, Right Side Fixing Plate, and then, remove the Print Head Adjustment Knob assembly.

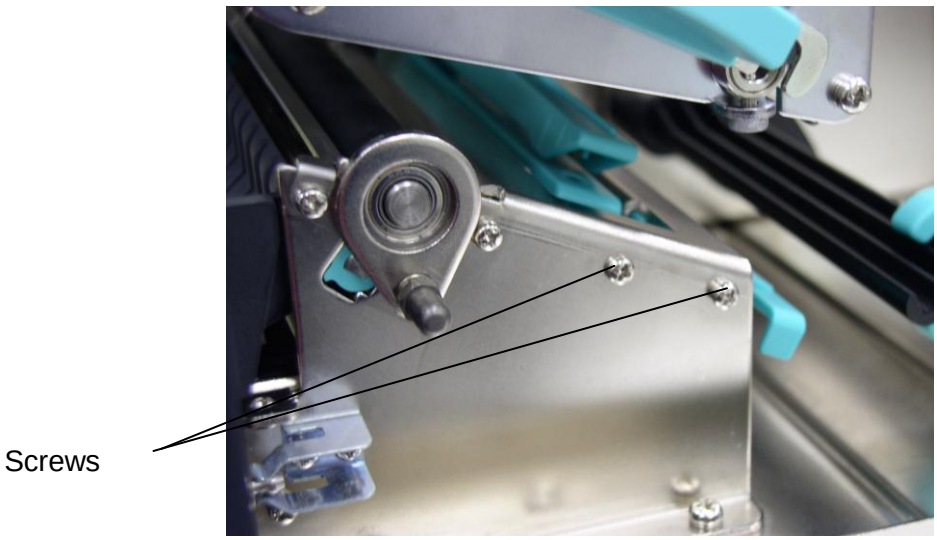
5. Remove A.B.C.D in order.
6. Loosen M4 screw, knob, E and F



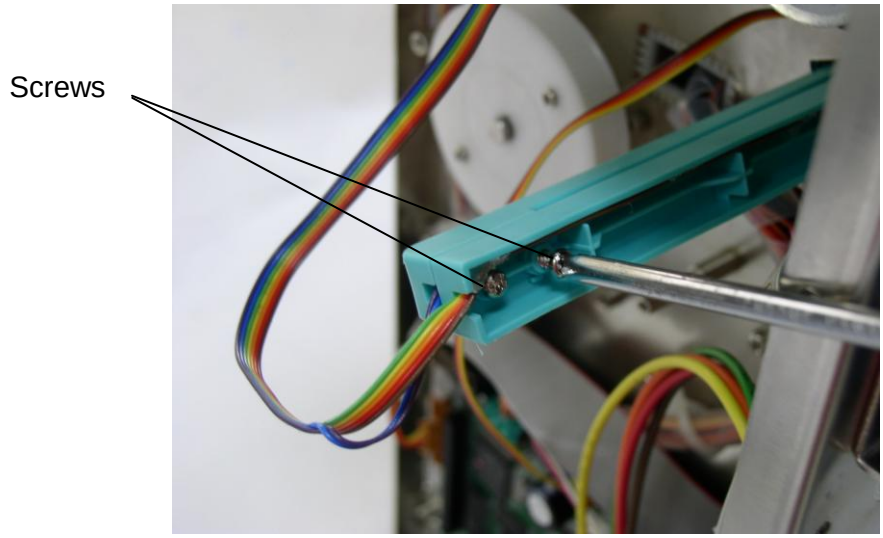
7. Reassemble in the reverse procedures after replacing.

4.12 Replacing Gap / Black Mark Sensor

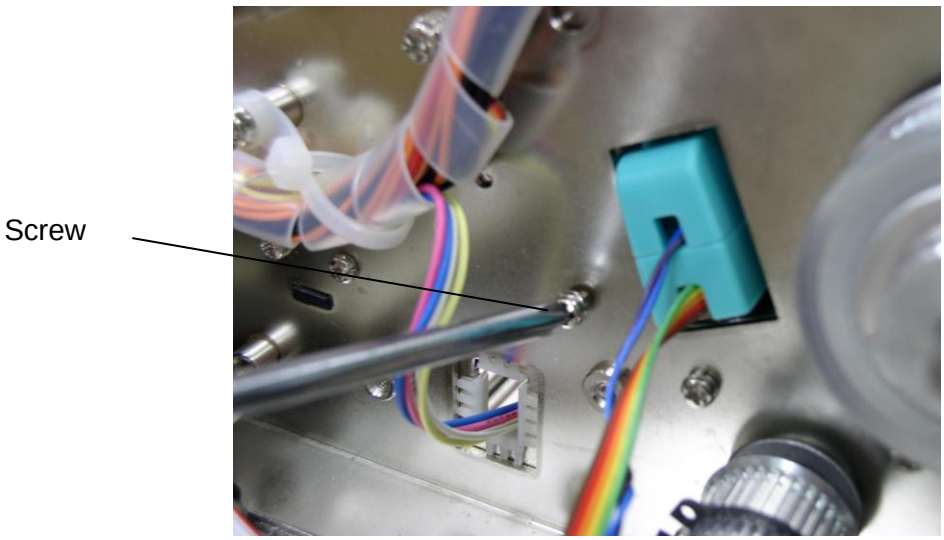
1. Disconnect Gap/Black Mark Sensor harness from Main PCB.
2. Remove the 2 screws these are connected the Gap/Black Mark sensor and plate.



3. Loosen two screws on the Gap/Black Mark Sensor Assembly.

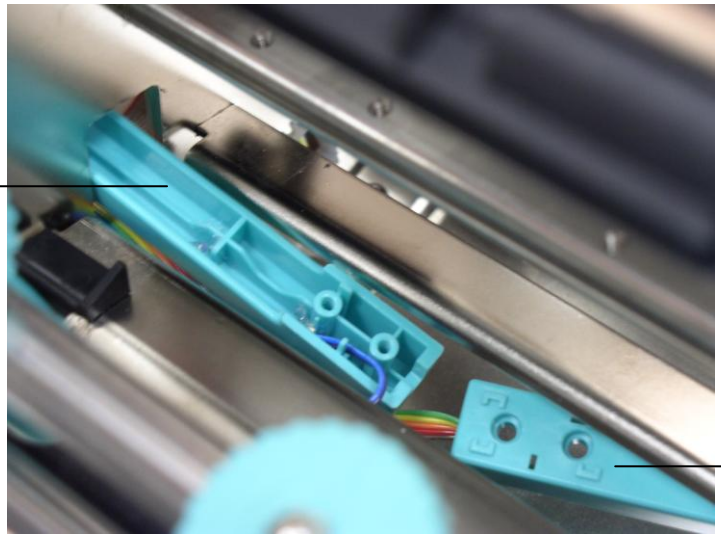


4. Remove the screw on the main frame. The Gap/Black Mark Sensor assembly is separated into upper part and lower part.

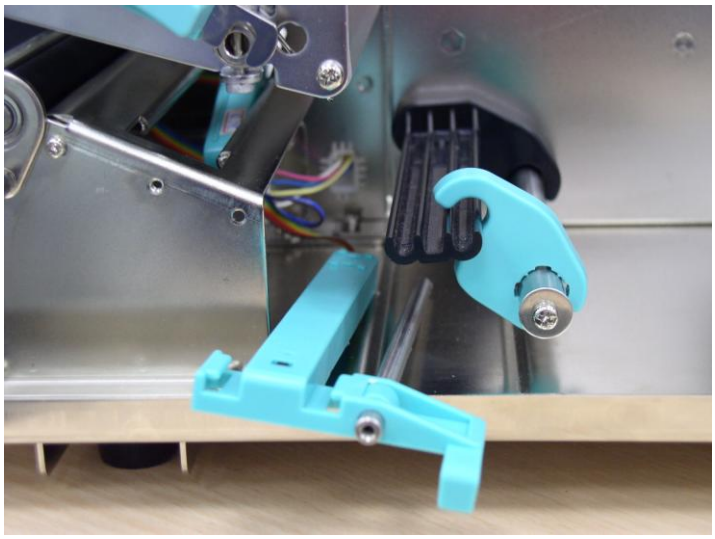


5. Pull the upper part to the left side through the hole, place the upper part upside down, pull the lower part to the right side first, and then, pull out the upper part.

Upper part of Gap/Black mark sensor assembly



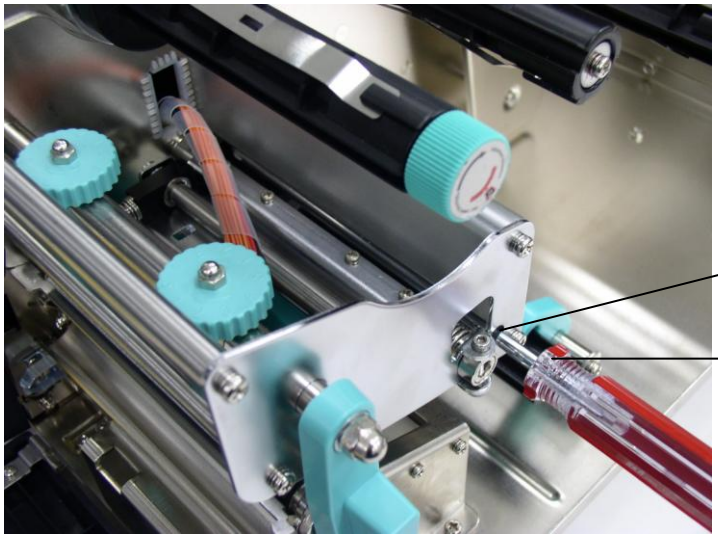
Lower part of Gap/Black mark sensor assembly



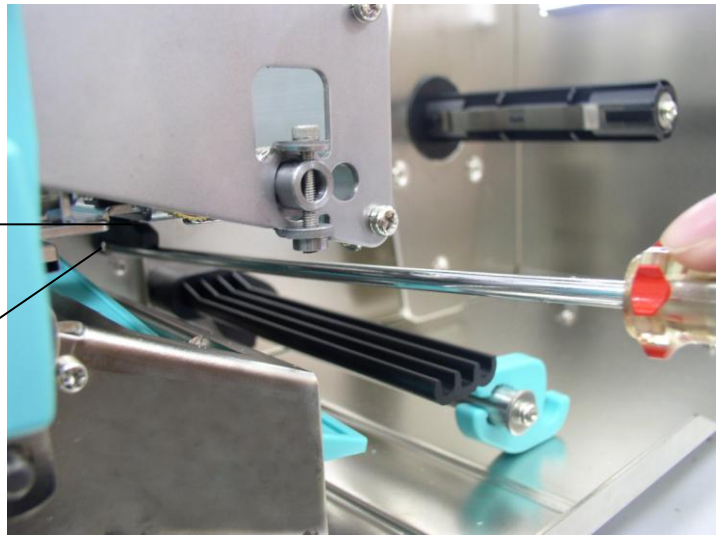
6. Reassemble in the reverse procedures after replacing.

4.13 Replacing Ribbon Sensor

1. Use the screwdriver through the hole horizontally to remove the upper screw of Ribbon Sensor.

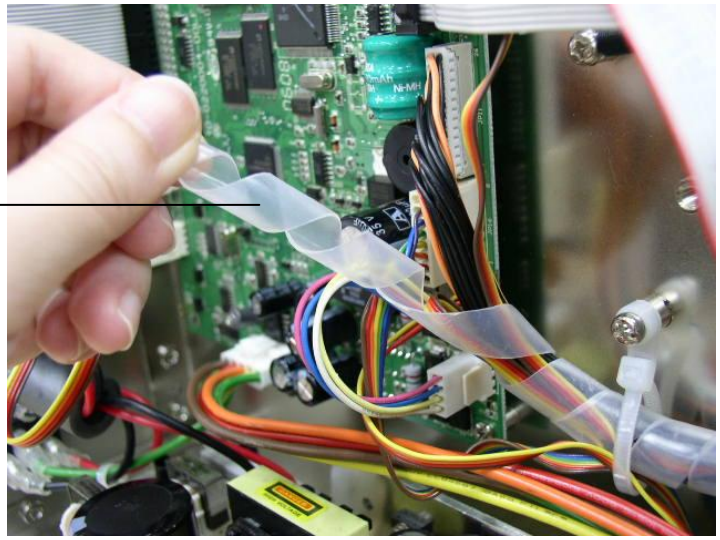


2. Remove the lower screw of Ribbon sensor.



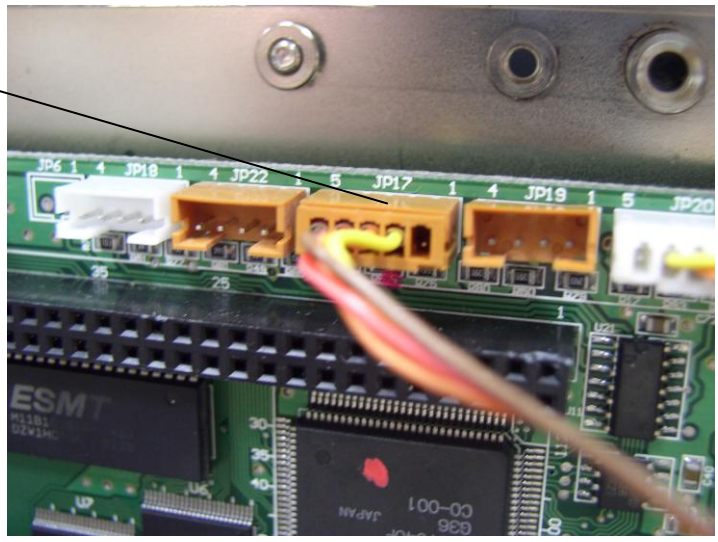
3. Remove the curly plastic pipe that covers some harness on the left side plate.

curly plastic pipe



4. Disconnect the JP17 connector from the main board.

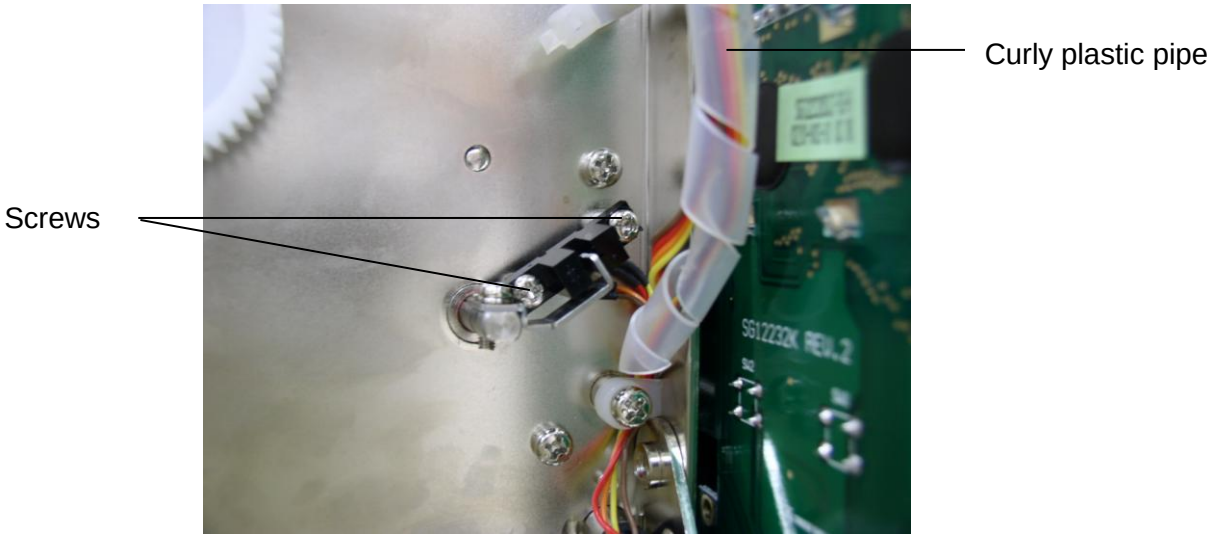
JP17



5. Reassemble in the reverse procedures after replacing.

4.14 Replacing Print Head Lift Sensor

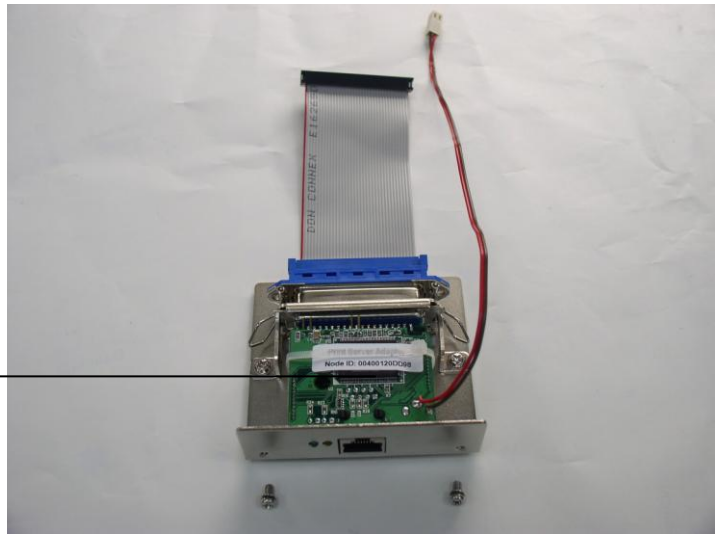
1. Open the Top Left Side Cover.
2. Remove the Curly plastic pipe, and pull out the harness.
3. Disconnect all harness of Print Head Lift Lever Sensor. Remove the 2 screws of Print Head Lift Lever Sensor.
4. Remove Print Head Lift Lever Sensor.

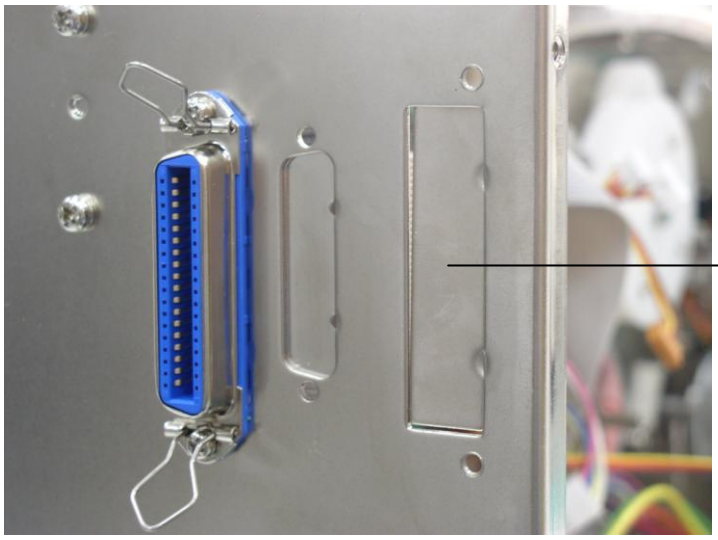


5. Reassemble in the reverse procedures after replacing.

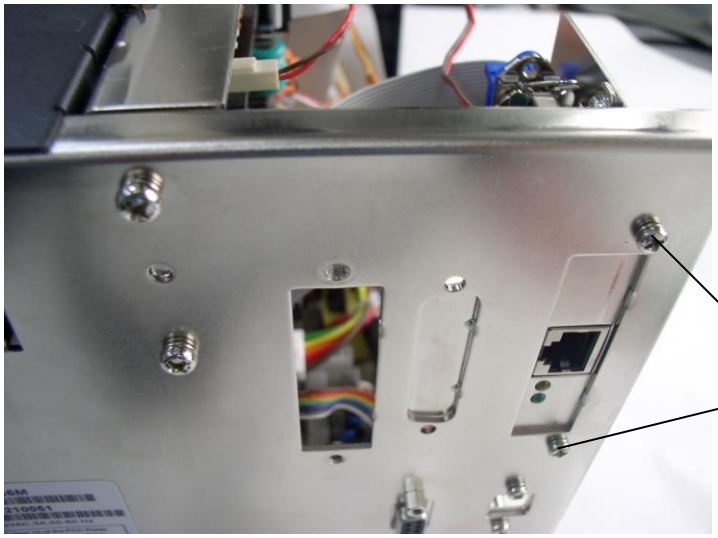
4.15 Replacing Internal Print Server Module

1. Open the Top Left Side Cover.
2. Use tool to break the reserved hole for installing the Internal Print Server Module.

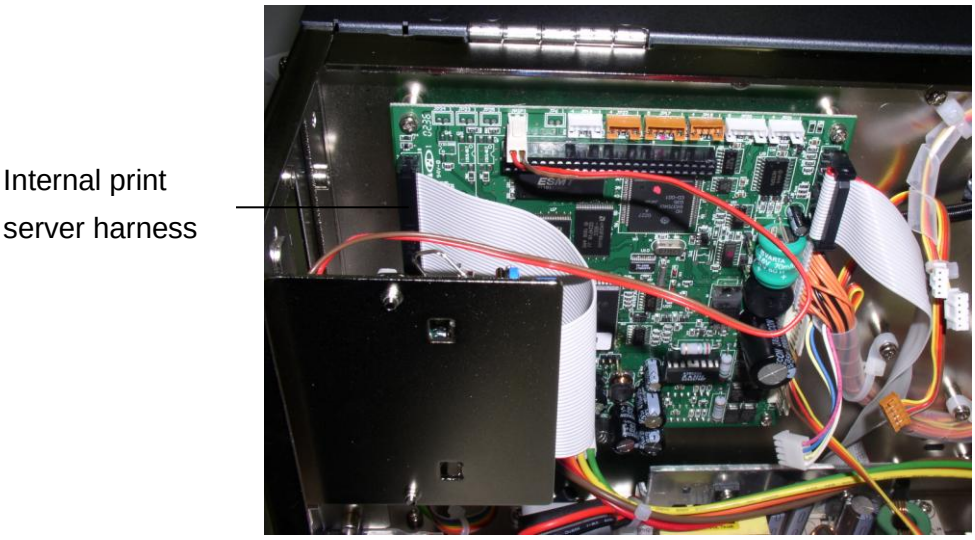




3. Install the Internal Print Server Module, and screw the 2 screws to connect the Internal Print Server Module onto the back plate.

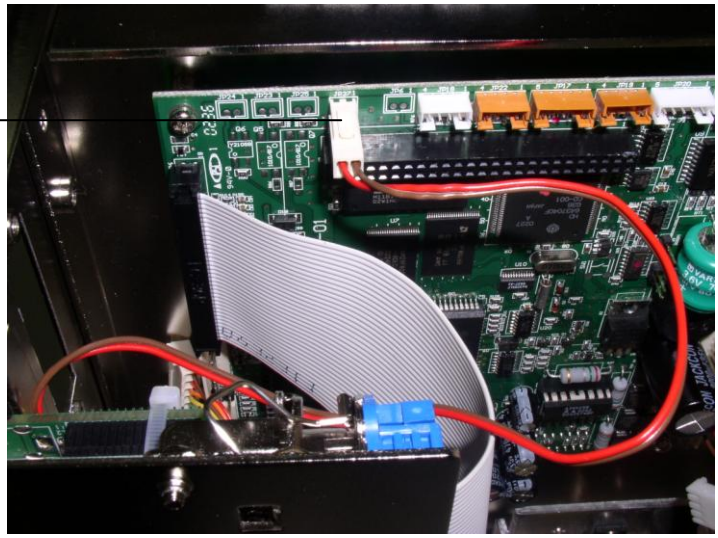


4. Remove the centronic harness on PCB JP12 connector. Connect internal print server centronics harness to main PCB JP12.



5. Connect the 2-Pin white connector to location JP37 on the main board.

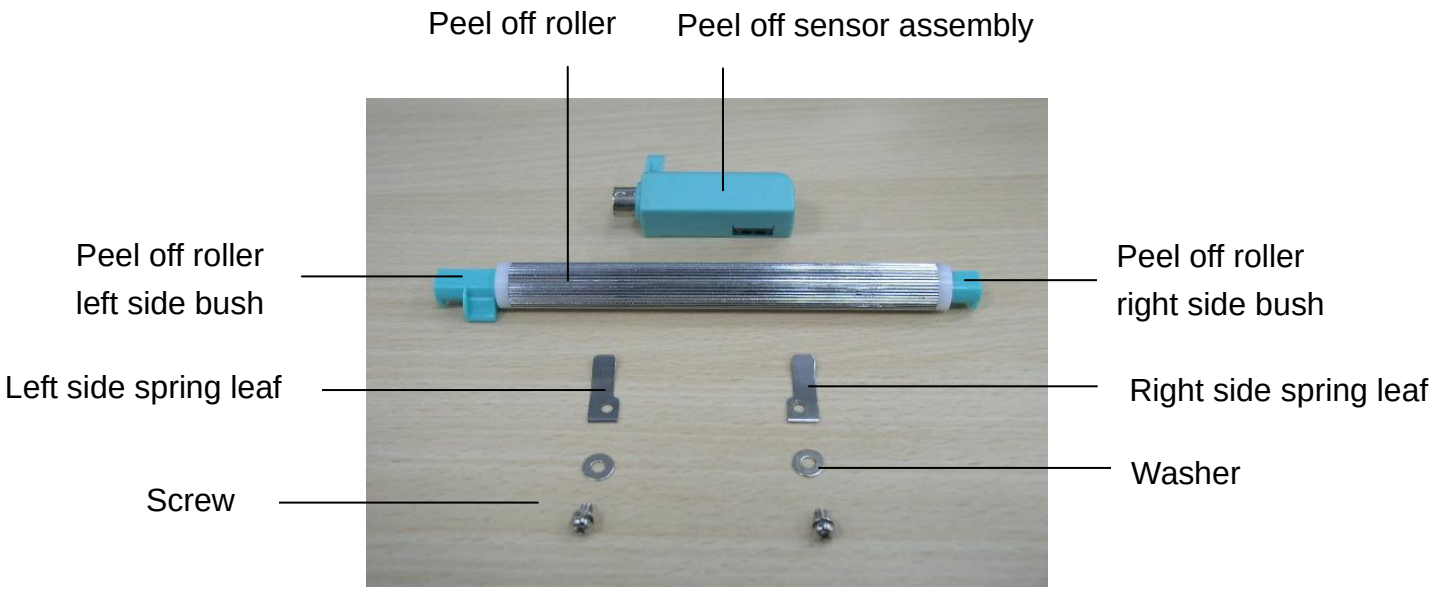
2-Pin white connector at JP37



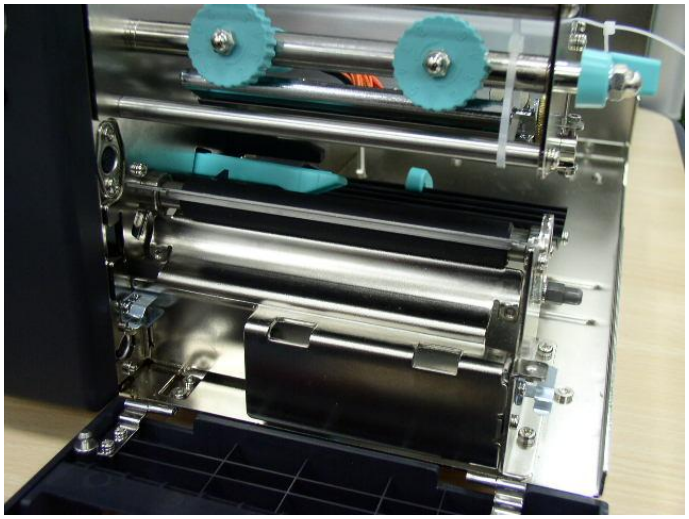
6. Reassemble in the reverse procedures after replacing.

4.16 Peeler Kit Installation (Option)

- **Checklist:**

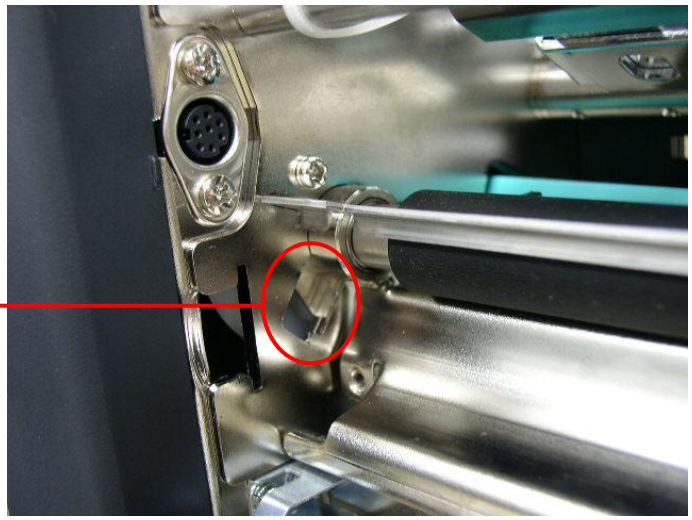


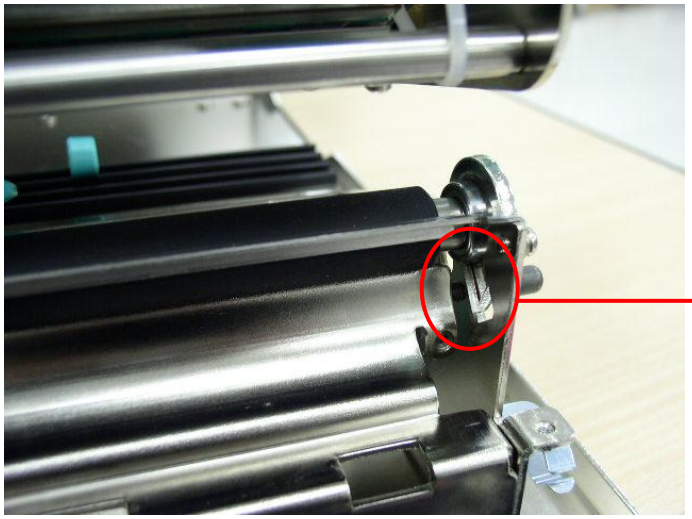
1. Open the lower front panel and the printer right side cover.



2. There is a notch near by the platen roller bearing.

Notch for peel off roller left side bush

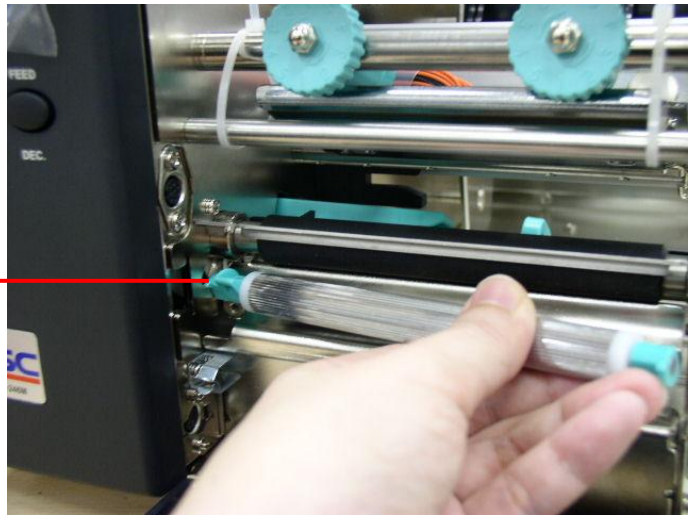




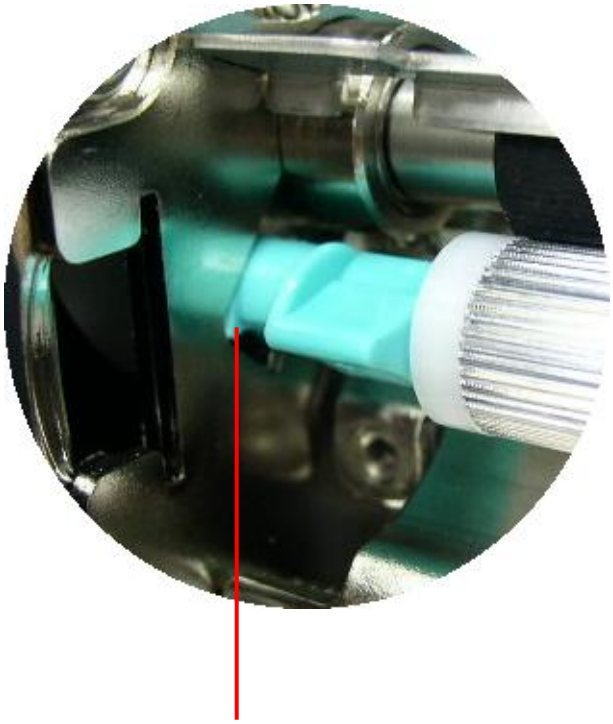
Notch for peel off roller right side bush

3. Insert the peel off roller left side bush to the notch at the middle plate and insert the peel off roller right side bush to the notch at the right frame. Please refer to the magnified left and right side bush location for installation.

Insert the left side first.



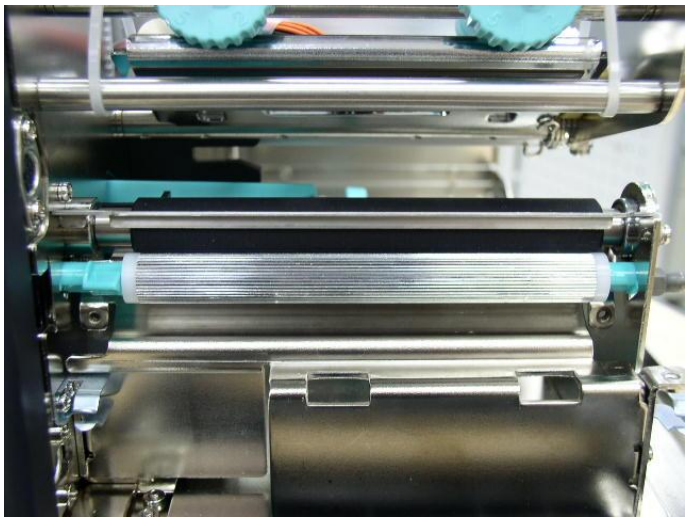
Left side



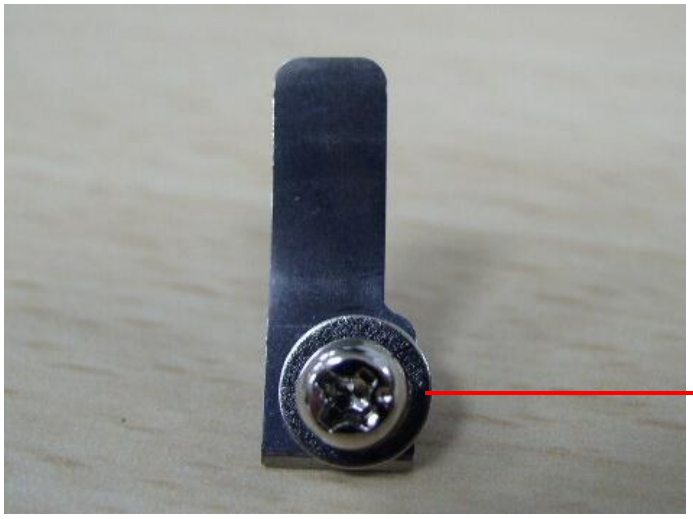
Bush location

Right side

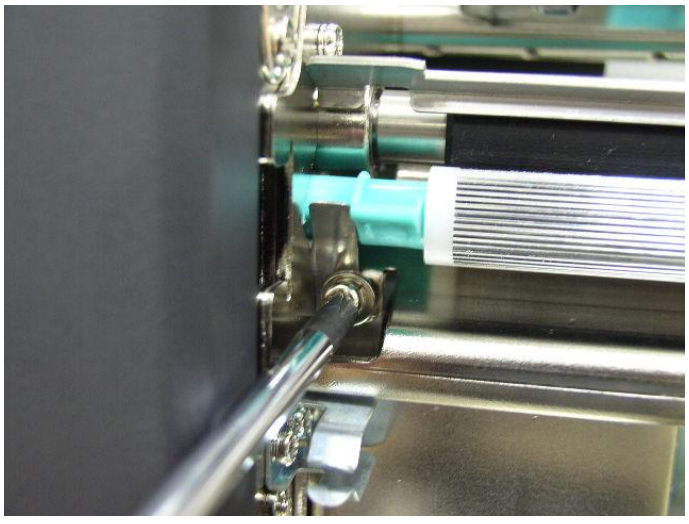
Bush location

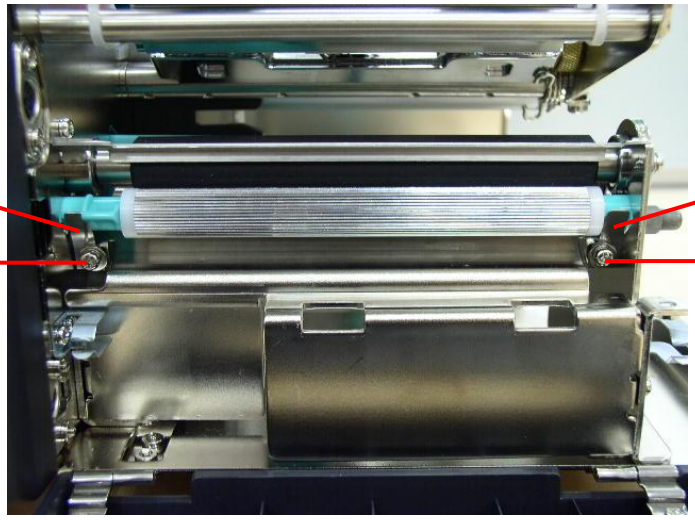


4. Fasten the leaf springs and washers with screws to fix the left and right side bush.

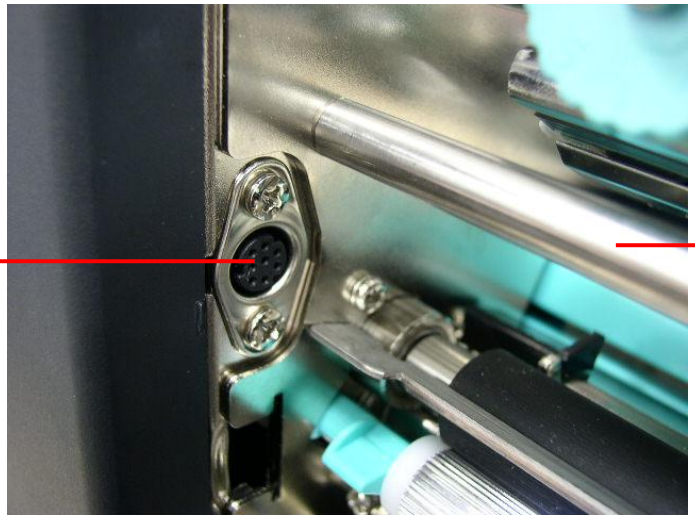


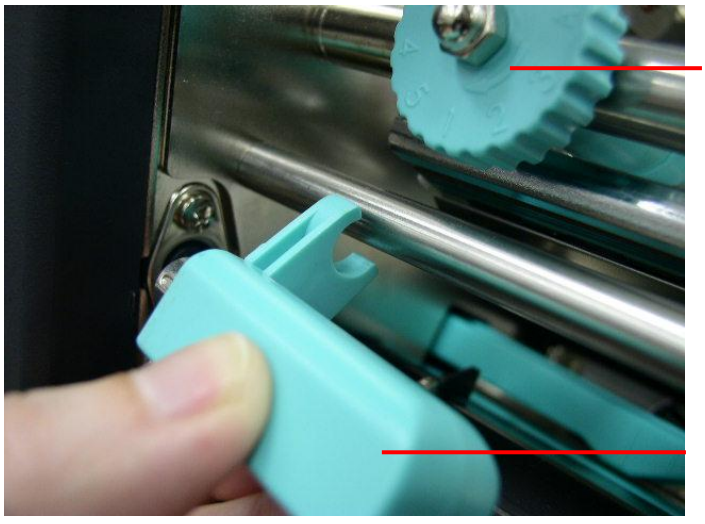
Washer is placed between leaf spring and screw.

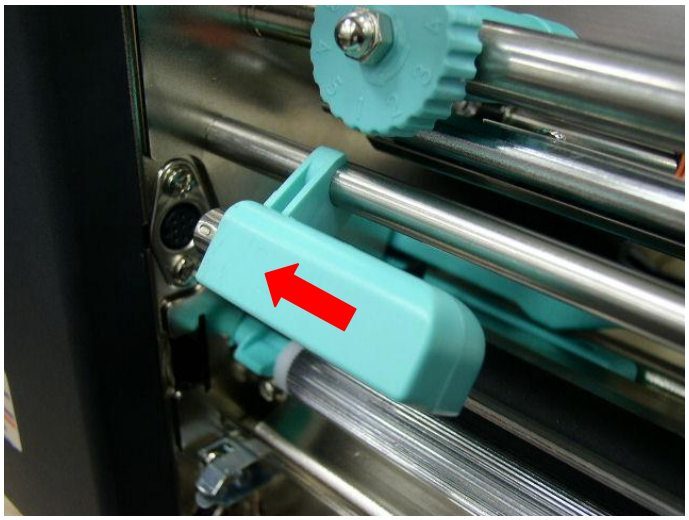




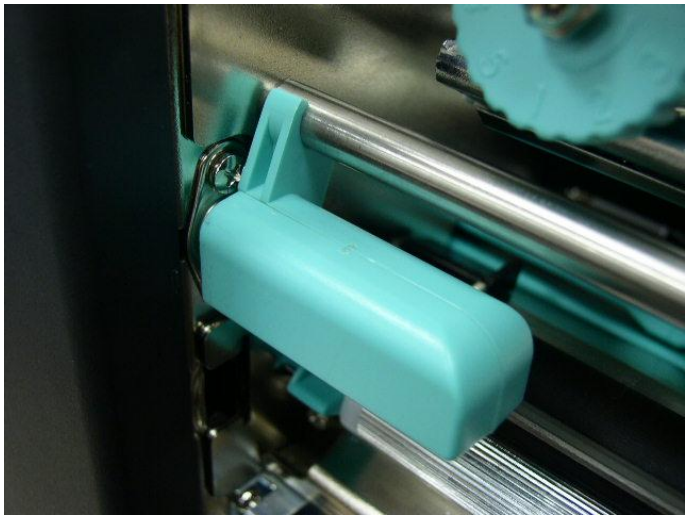
5. Hook the peel-off sensor on the bar which is near by the peel off sensor connector. Plug in the peel-off sensor assembly to the connector.





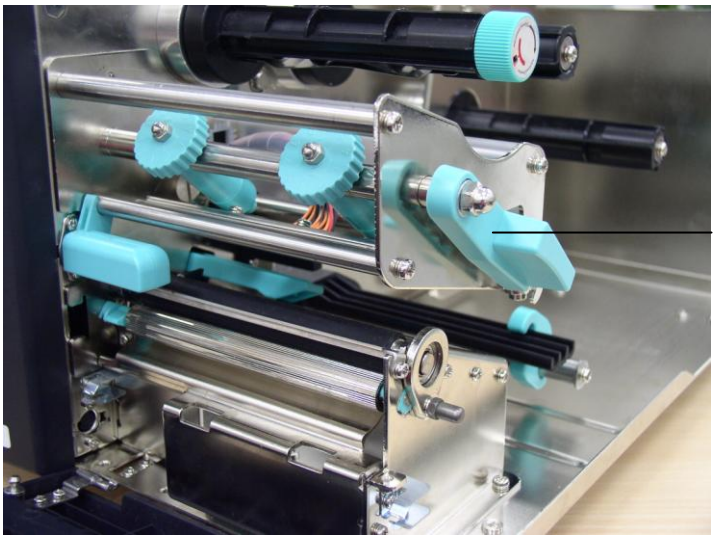


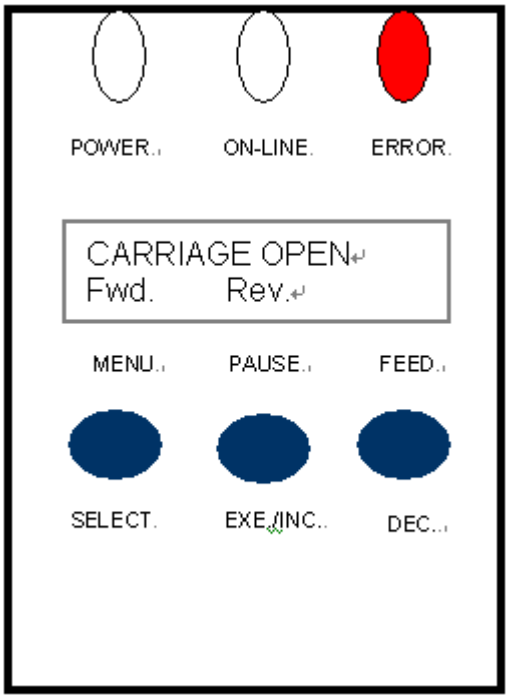
Plug in the peel-off sensor assembly to the connector.



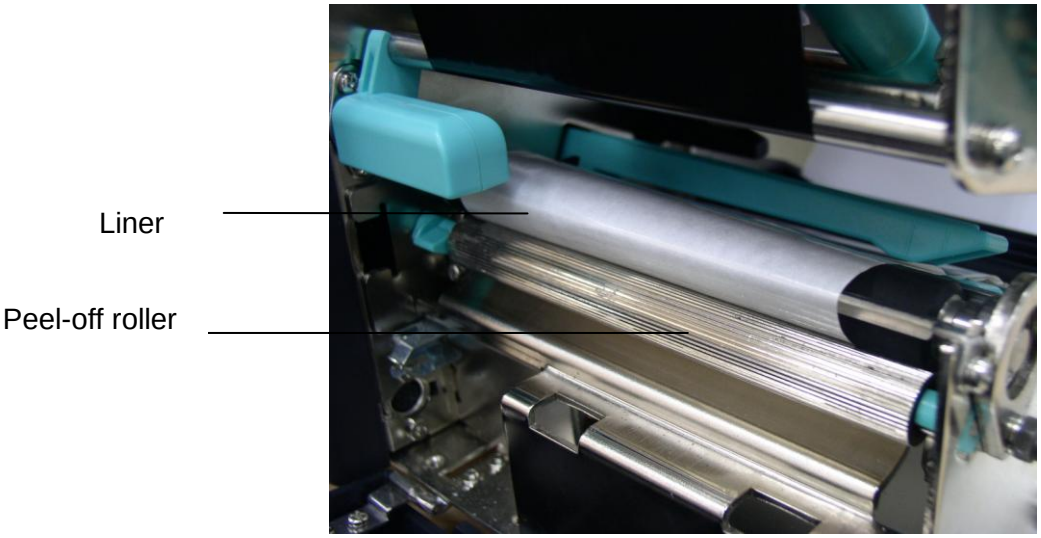
4.17 Loading Label For Peel-off Mode

1. Open the **Print Head Lift Lever**. The message “CARRIAGE OPEN” will be shown on the LCD screen, and the RED LED is on. The LCD panel shown as below.

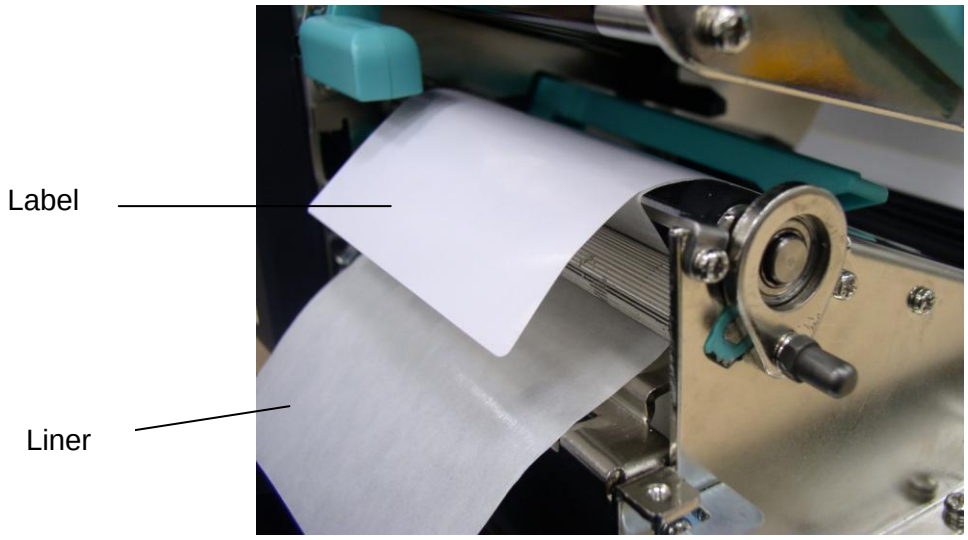




2. Remove the first one label from the liner. Insert the liner into the gap between **Platen** and **Peel-off roller**.



3. Press the button **(MENU, SELECT)** under the message **"Fwd."** to feed the label forward a little bit. Press the button **(PAUSE, EXE./INC.)** under the message **"Rev."** to reverse the label if it is necessary for adjusting the label. Pull the liner outward tightly. Close the Print Head Lift Lever.



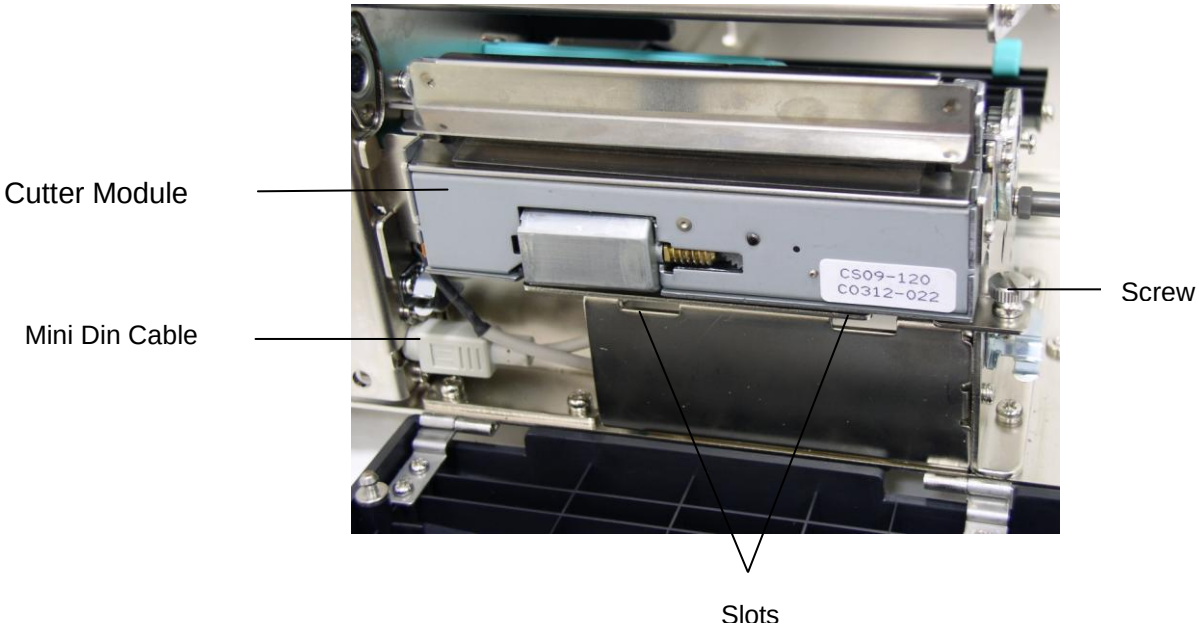
4. Close the lower front panel. Pull the label through the Peel-off panel upper opening; pull the liner through the Peel-off panel upper opening.

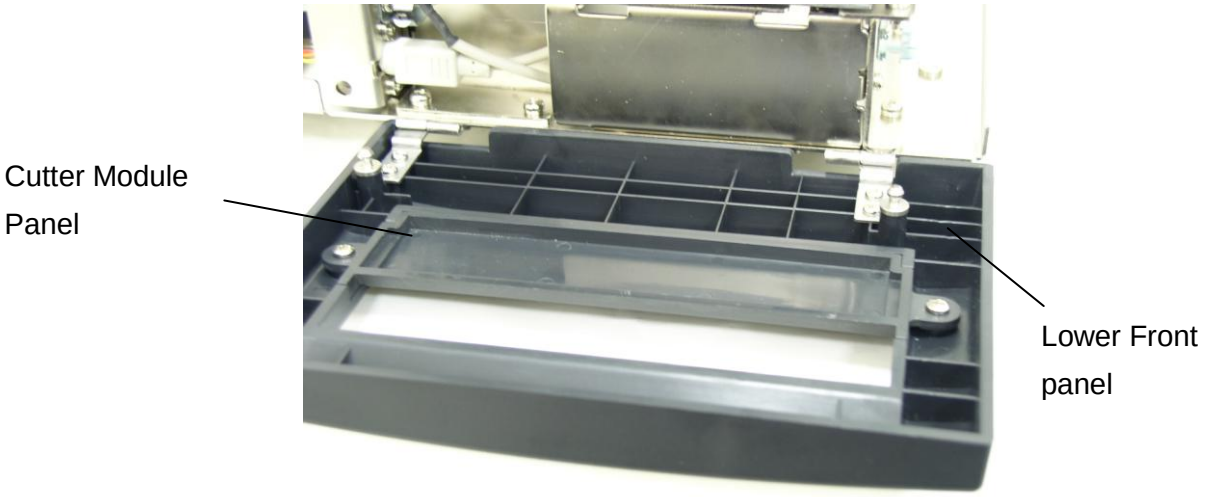
Label
Liner
POWER
ON-LINE
ERROR
MENU
PAUSE
FEED
SELECT
EXE./INC.
DEC.

4.18 Cutter Module Installation (Option)

1. Remove the 2 screws of the peel-off panel and uninstall the peel-off panel if it is installed in the front panel.
2. Plug the mini DIN cable into the socket of the cutter connector.
3. Install the cutter module.

   Notice : The cutter module bracket should be mounted into the slots.
4. Fix the cutter module onto the printer cutter mount with a screw.
5. Install the Cutter Module Panel with 2 screws to the front panel.





5. POWER ON UTILITIES

5.1 Calibrate Gap/Black Mark Sensor

1. **Gap/Black Mark Sensor Calibration**
   This utility is used to calibrate the sensitivity of the gap/black mark sensor. The gap/black mark sensor should be calibrated whenever **changing the label media** or **executing printer initialization**.
   Please follow the steps below to calibrate the gap sensor.
   a. Install the ribbon and label media as the above-mentioned procedures, and engage the print head lift lever.
   b. Hold down the MENU button to scroll the cursor to the item “2. Sensor Calib.” And then press the EXE/INC button to execute gap sensor calibration utility.

5.2 Self-test

To initiate the self-test mode, depress the MENU button. Press MENU button to scroll the cursor to Printer test. Press EXE button to enter the submenu and press MENU button to “Printer Config”. Item. Press EXE button to print printer internal setting. In self-test, a check pattern is used to check the performance of the print head. Following the check pattern, the printer prints internal settings as listed below:

1. Printer model and firmware version
2. Check sum
3. Serial port setting
4. Code page setting
5. Country code setting
6. Print speed setting
7. Print density setting
8. Label size setting
9. Gap (Bline) width and offset setting
10. Backing paper transparence
11. File list

12. Memory available

5.3 Printer Initialization

Printer Initialization will restore printer settings to defaults.
Default settings are listed as below.

Item	Default Value	Cleared by Initialization	Property Saved when Turning off Power
Mileage	N/A	No	Yes
Check Sum	N/A	No	Yes
Serial Port	9600,n,8,1	Yes	Yes
Code Page	437	Yes	Yes
Country Code	001	Yes	Yes
Tear Mode	On	Yes	Yes
Peel Mode	Off	Yes	Yes
Cutter Mode	Off	Yes	Yes
Offset	0	Yes	Yes
Reference Point	0,0	Yes	Yes
Print Direction	1	Yes	Yes
Speed	4 inch/sec	Yes	Yes
Density	07	Yes	Yes
Label Size	4 x 2.5”	Yes	Yes
Gap/Bline Sensor	Gap Sensor	Yes	Yes
Gap(Bline)	0.12” (3 mm)	Yes	Yes
Transparency	Will be reset. Need to re-calibrate the gap sensor	Yes	Yes
Ribbon Sensor Sensitivity	1	Yes	Yes
LCD Language	English	Yes	Yes

Aux. LED	Off	Yes	Yes
Aux. Buzzer	Off	Yes	Yes
Download Files	N/A	No	Yes
RTC	N/A	No	No

Please follow the steps below to initialize the printer:

1. Turn off the printer power.
2. Hold down the **PAUSE** and **FEED** buttons and turn on the printer power.
3. Do not release the buttons until the Red LEDs flash in turn.

Note[1]: Printing method (thermal transfer or thermal direct printing) will be set automatically at the activation of printer power.

Note[2]: When printer initialization is done, please calibrate the gap sensor again.

6. TROUBLESHOOTING

The following guide lists the most common problems that may be encountered when operating this bar code printer. If the printer still does not function after all suggested solutions have been invoked, please contact the Customer Service Department of your purchased reseller or distributor for assistance.

Phenomenon	Cause of Errors	Recovery Procedure
No ribbon	1. Running out of ribbon 2. The ribbon is installed incorrectly. 3. The ribbon sensor is not been well calibrated.	1. Supply a new ribbon roll. 2. Please refer to the steps in user's manual to reinstall the ribbon. 3. Please calibrate the ribbon sensor
No paper	1. Running out of label 2. The label is installed incorrectly. 3. The moveable gap/black mark sensor is not placed in the proper location.	1. Supply a new label roll. 2. Please refer to the steps in user's manual to reinstall the label roll. 3. Please move the sensor to the proper location.
Poor printing quality	1. Dirt is accumulated on the print head. 2. The density setting is not set properly 3. Ribbon and media are incompatible. 4. The pressure of print head is not set properly	1. Please refer to the steps in user's manual to clear the print head. 2. Adjust the print density and speed. 3. Change proper ribbon or proper label roll. 4. Adjust the print head pressure adjustment knob.
Power indicator does not illuminate	1. The power cord is not properly connected.	1. Please check whether the power cord is well connected between printer and outlet.
Paper jam	1. The label size is not set properly.	1. a. Reset the label size. b. Re-calibrate the

	2. Labels may be stuck in side print mechanism.	gap/black mark sensor. 2. Remove the stuck label.
Carriage open	The printer carriage is open.	Please close the print carriage.
Memory full (FLASH / DRAM)	The space of FLASH/DRAM is full.	Delete unused files in the FLASH/DRAM.
No printout printing through serial port	1. The serial port setting is not consistent between host and printer. 2. The serial port cable pin configuration is not pin to pin assignment.	1. Please reset the serial port setting. 2. Please replace the cable with pin to pin assignment.

7. MAINTENANCE

This session presents the clean tools and methods to maintain your printer.
Use one or more of the following supplies that meets your needs:

- Cleaning pens
- Cleaning swabs
- Lint-free cloth.

The cleaning process is described as following

Printer Part	Method
*Printer Head	■ Let the print head to cool for one minute ■ Use a cotton swab and 100% ethanol to clean the print head surface.
Platen Roller	■ Rotate the platen roller and wipe it thoroughly with 100% ethanol and a cleaning swab, or lint-free cloth.
Exterior	■ Wipe it with water-dampened cloth
Interior	■ Brush or air blow

Note:
***** Do not touch printer head by hand. If you touch it careless, please use ethanol to clean it.
*****It's industry alcohol. Please do not use regular alcohol, which may damage the printer head.

UPDATE HISTORY

Date	Content	Editor
2006/3/28	1. Modify to RoHS version.	Camille
2006/6/9	1.Modify the 5-3 item 8 : Main board ass'y from 98-0220085-00LF to 98-0220085-10LF 2.Modify the 3-9 parallel port circuit figure	Camille
2006/8/28	1. Add 5-3 item 11 : External Ethernet print server (Z)	Camille
2007/1/17	1. Add 5-3 item 11 : External wireless print server/US© and External wireless print server©(C) 2. Add 5-3 item 12 : Cutter driver IC A3952SB (Non-RoHS)	Camille
2007/3/8	1. Add 5-2 item 12 : Media guide bar part number	Camille
2007/3/9	1. Modify 5-3 item 11 : External Ethernet print s©er (C) part no.	Camille
2007/4/12	1. Modify 5-2 accessible parts ll drawing	Camille
2007/4/14	1. Update TSC e-mail address	Camille
2007/5/31	1. Update printer Initialization section	Camille
2007/6/13	1. Update Power supply unit part no. from 62-0180001-00LF to 62-0180001-10LF	Camille
2007/7/19	1. Add cutter off and peeler Mini-DIN connector pin assignment	Camille
2007/8/1	1. Company information update	Camille
2008/1/23	1. Modify description for 98-0220077-00LF Internal Ethernet print server (T), 98-0220078-00LF Internal Ethernet prin©erver (C) and 98-0220079-00LF Internal wireless p©t server (C) 2. Revoke part number for 98-1000017-00LF External Ethernet print server (Z)/US & 98-1000018-00LF External Ethernet print server (Z)/EU (parallel port) 3. Modify description for 98-1000008-00LF External	Camille

	Etherne©rint server (C)/US, 98-1000009-00LF External Ethe©t print server (C)/EU, 98-1000019-00LF External Ethernet print server (Z)/US, 98-1000020-00LF External Ethernet print server (Z)/EU, 98-1000011-00LF External w©less print server (C)/US and 98-1000012-00LF Externa©ireless print server (C)/EU	
2008/6/30	Remove the parts list section	Camille
2011/1/25	Modify TSC address	Camille

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